

**U. S. Nuclear Regulatory Commission
Site-Specific
Written Examination**

Applicant Information

Name:

Region: I

Date:

Facility/Unit: BVPS-1

License Level: RO

Reactor Type: Westinghouse PWR

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected six hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

Examination Value

__100__ Points

Applicant's Score

_____ Points

Applicant's Grade

_____ Percent

BVPS-1LOT5 NRC EXAM
Reactor Operator

1.	A	B	C	D	26.	A	B	C	D
2.	A	B	C	D	27.	A	B	C	D
3.	A	B	C	D	28.	A	B	C	D
4.	A	B	C	D	29.	A	B	C	D
5.	A	B	C	D	30.	A	B	C	D
6.	A	B	C	D	31.	A	B	C	D
7.	A	B	C	D	32.	A	B	C	D
8.	A	B	C	D	33.	A	B	C	D
9.	A	B	C	D	34.	A	B	C	D
10.	A	B	C	D	35.	A	B	C	D
11.	A	B	C	D	36.	A	B	C	D
12.	A	B	C	D	37.	A	B	C	D
13.	A	B	C	D	38.	A	B	C	D
14.	A	B	C	D	39.	A	B	C	D
15.	A	B	C	D	40.	A	B	C	D
16.	A	B	C	D	41.	A	B	C	D
17.	A	B	C	D	42.	A	B	C	D
18.	A	B	C	D	43.	A	B	C	D
19.	A	B	C	D	44.	A	B	C	D
20.	A	B	C	D	45.	A	B	C	D
21.	A	B	C	D	46.	A	B	C	D
22.	A	B	C	D	47.	A	B	C	D
23.	A	B	C	D	48.	A	B	C	D
24.	A	B	C	D	49.	A	B	C	D
25.	A	B	C	D	50.	A	B	C	D

BVPS-1LOT5 NRC EXAM
Reactor Operator

51.	A	B	C	D	76.	A	B	C	D
52.	A	B	C	D	77.	A	B	C	D
53.	A	B	C	D	78.	A	B	C	D
54.	A	B	C	D	79.	A	B	C	D
55.	A	B	C	D	80.	A	B	C	D
56.	A	B	C	D	81.	A	B	C	D
57.	A	B	C	D	82.	A	B	C	D
58.	A	B	C	D	83.	A	B	C	D
59.	A	B	C	D	84.	A	B	C	D
60.	A	B	C	D	85.	A	B	C	D
61.	A	B	C	D	86.	A	B	C	D
62.	A	B	C	D	87.	A	B	C	D
63.	A	B	C	D	88.	A	B	C	D
64.	A	B	C	D	89.	A	B	C	D
65.	A	B	C	D	90.	A	B	C	D
66.	A	B	C	D	91.	A	B	C	D
67.	A	B	C	D	92.	A	B	C	D
68.	A	B	C	D	93.	A	B	C	D
69.	A	B	C	D	94.	A	B	C	D
70.	A	B	C	D	95.	A	B	C	D
71.	A	B	C	D	96.	A	B	C	D
72.	A	B	C	D	97.	A	B	C	D
73.	A	B	C	D	98.	A	B	C	D
74.	A	B	C	D	99.	A	B	C	D
75.	A	B	C	D	100.	A	B	C	D

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 001

Given the following conditions:

- The Unit is at 85% power. All systems are in NSA.
- A Control Bank "D", Group 2 rod drops to the bottom of the core.
- The plant is stabilized, the cause of the failure identified and repaired.

Which one of the following describes the method for retrieving the dropped rod in accordance with 1OM-1.4.X, RCCA Or RCCA Group Misalignment?

- A. All rods in group 2 except the affected rod are disconnected. Control Bank "D", Group 1 rods remain connected. The Group 2 Step Counter is set to the dropped rod position prior to retrieval. The affected rod is withdrawn until the Group 2 Step Counter matches the Group 1 Step Counter.
- B. All rods in Control Bank "D", Group 1 and Group 2, except the affected rod are disconnected. The Step Counter for Group 2 is set to the dropped rod position. The Step Counter for Group 1 is left at its current position. The affected rod is withdrawn until Group 1 and Group 2 Demand are equal.
- C. All rods in Control Bank "D", Group 1 and Group 2, except the affected rod are disconnected. The Step Counters for Group 1 and Group 2 are set to the dropped rod position. The affected rod is withdrawn until the Step Counters match the initial bank position.
- D. All rods in group 2 except the affected rod are disconnected. Control Bank "D", Group 1 rods remain connected. The Step Counters for Group 1 and Group 2 are set to the dropped rod position. The affected rod is withdrawn until the Step Counters match the initial bank position.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 002

The plant is operating at 100% power, NSA when the following indications are observed.

- Control Bank "D" rod F-6 position indicates '0' steps.
- Rod bottom rod drop alarm is received.

If rod F-6 is the only rod bottom light lit and the plant remains on-line, which one of the following describes the **INITIAL** automatic response of the CVCS?

- A. Letdown flow is increased.
- B. Letdown flow is decreased.
- C. Charging flow is increased.
- D. Charging flow is decreased.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 003

Given the following conditions:

- The plant is in Mode 3.
- A reactor startup is in progress.
- Shutdown Bank "A" is fully withdrawn.
- Shutdown Bank "B" is being withdrawn.
- The following annunciator is received in the Control Room:
 - [A3-82], REACTOR COOL PP BRG OIL RESERVOIR LOW
- The startup is stopped while a Containment entry is made to investigate.

The operator in containment reports a large oil leak in the vicinity of "1A" RCP.

Which one of the following describes the action required?

- A. Trip "1A" RCP and refer to the alarm response procedure for "1A" RCP low flow.
- B. Trip the reactor, trip "1A" RCP and refer to the alarm response procedure for "1A" RCP low flow.
- C. Trip the reactor, perform Immediate Manual Actions of E-0, Reactor Trip Or Safety Injection, trip "1A" RCP and continue in E-0.
- D. Monitor "1A" RCP bearing temperatures. If any bearing temperature exceeds 275°F, trip the RCP and refer to the alarm response procedure for RCP bearing high temperature.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 004

The following conditions exist for starting a Reactor Coolant Pump (RCP):

- Local Lift Oil Pump control switch in 'AUTO'.
- RCP control switch placed in 'START' and released.

Which one of the following describes the sequence of events that will take place to start the RCP?

- A. Lift Oil Pump starts. After 50 seconds, RCP starts. 2 minutes later the Lift Oil Pump stops.
- B. Lift Oil Pump starts. After 2 minutes, RCP starts. 50 seconds later the Lift Oil Pump stops.
- C. After 50 seconds the Lift Oil Pump starts. 2 minutes later the RCP starts. 50 seconds, the Lift Oil Pump stops.
- D. After 50 seconds the Lift Oil Pump starts. After 50 seconds the RCP starts. 2 minutes later the Lift Oil Pump stops.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 005

The Unit is operating at 100% power NSA, when [LT-1CH-112], VCT Level Transmitter fails high.

After an extended period of operation, the following conditions result.

- [A3-53], VOLUME CONTROL TANK LEVEL HIGH-LOW alarms.
- VCT level indicates approximately 5%.

Assuming **NO** action by the crew, which one of the following describes the plant response?

- A. Charging pump suctions from the VCT remain open; the RWST suction valves remain closed.
- B. Charging pump suctions from the VCT will close; the RWST suction valves remain closed.
- C. Charging pump suctions from the VCT remain open; the RWST suction valves also open on low VCT level.
- D. Charging pump suctions from the VCT will close; the RWST suction valves open on low VCT level.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 006

The operating crew is performing a dilution in preparation for rod withdrawal to criticality.

If K_{eff} is approximately .99 when the dilution is started, at what point in the dilution can the crew determine that K_{eff} is approximately .995?

- A. When the Source Range counts double from their initial value.
- B. When there is a stable startup rate with no change in the dilution flow rate.
- C. When Control Bank "A" control rods are withdrawn from the core.
- D. When the Source Range counts double 2 - 3 times from their initial value.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 007

Given the following conditions:

- An ATWS has occurred.
- The operating crew is performing the actions of FR-S.1, Response To Nuclear Power Generation/ATWS.
- All SG narrow range levels are offscale LOW.

Which one of the following describes the required operation of the AFW System and why?

- A. Operate all available AFW pumps to establish total flow of 355 gpm; to maintain minimum heat sink and restore SG levels.
- B. Operate motor driven AFW pumps only to establish total flow of 355 gpm; to minimize effects of RCS cooldown on reactivity.
- C. Operate all available AFW pumps to establish total flow of 630 gpm; to maintain minimum heat sink and restore SG levels.
- D. Operate motor driven AFW pumps only to establish total flow of 630 gpm; to minimize effects of RCS cooldown on reactivity.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 008

Given the following conditions:

- The Unit was operating at 100% power.
- A PORV failed open.
- The reactor has tripped on low Pressurizer pressure.
- Pressurizer pressure stabilizes at 1700 psig.

Plant status is as follows:

- All control rods are fully inserted.
- Status light "S Inj Act Sig" NOT LIT at Panel 62, C-4.
- Normally running charging pump is in service.
- Standby charging pump not running,
- NO LHSI pumps running.
- CIA NOT actuated.
- CIB NOT actuated.
- Main steam lines NOT isolated.
- Feedwater Isolation Signal NOT actuated.

Which one of the following describes the required manual operator actions?

Manually initiate both trains of ...

- A. Safety Injection.
- B. Safety Injection and CIB.
- C. Safety Injection, CIB, and Main Steam Line Isolation.
- D. Safety Injection, CIB, Main Steam Line Isolation, and CIA.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 009

Which one of the following contains BOTH conditions that will result in indicated reactor power being **LOWER** than actual reactor power?

- A. Source Range pulse height discrimination set too LOW.
Intermediate Range compensating voltage set too LOW.
- B. Source Range pulse height discrimination set too HIGH.
Intermediate Range compensating voltage set too HIGH.
- C. Source Range pulse height discrimination set too LOW.
Intermediate Range compensating voltage set too HIGH.
- D. Source Range pulse height discrimination set too HIGH.
Intermediate Range compensating voltage set too LOW.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 010

Following a Unit trip, Intermediate Range Startup rate is approximately -1/3 decade per minute on both channels.

Current indication on Intermediate Range channels are as follows:

- N35 = $5E^{-7}$ amps
- N36 = $2E^{-8}$ amps

Based upon the above indications, which one of the following describes the sequence for Source Range Channel N-31 and N-32 energization?

- A. Both Source Range channels will energize when N-35 reaches its setpoint.
- B. Both Source Range channels will energize when N-36 reaches its setpoint.
- C. N-31 will energize when N-35 reaches its setpoint. N-32 will energize when N-36 reaches its setpoint.
- D. N-31 will energize when N-36 reaches its setpoint. N-32 will energize when N-35 reaches its setpoint.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 011

Given the following conditions:

- The Unit is in Mode 1. All systems are in NSA.
- All Tav_g channels are approximately 3°F higher than T_{ref}.

Which one of the following modes on the Rod Control System Mode Selector Switch will provide the **FASTEST** rod speed if rod motion is demanded?

- A. Manual
- B. Automatic
- C. Control Bank "A"
- D. Shutdown Bank "A"

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 012

Given the following conditions:

- A Reactor Trip has occurred from 100% power.
- Actions of E-0, Reactor Trip Or Safety Injection are being performed.
- The operating crew is checking if SI flow should be terminated when it is determined that RCS subcooling on the ICCM is less than the required 43°F.

Which one of the following describes the method used to determine whether RCS subcooling is adequate?

- A. Minimum required subcooling is determined using the SPDS; actual RCS subcooling is calculated by the IPC.
- B. Actual RCS subcooling is determined using PRZR pressure and T-hot; minimum required subcooling is determined by the SPDS.
- C. Minimum required subcooling is determined using an EOP Attachment; RCS subcooling is determined using PRZR pressure and T-hot.
- D. RCS subcooling is determined using the ICCM; minimum required subcooling is determined using an EOP attachment.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 013

Which one of the following correctly completes the following description of CRDM Shroud Cooling Fan operation?

With all plant systems in their normal alignments, [1VS-F-2C], CRDM Shroud Fan would start in the _____ if [1VS-F-2A], CRDM Shroud Fan is NOT racked in on bus _____, and the diesel loading sequence signal is received.

- A. auto mode; 8N
- B. auto mode; 8P
- C. manual mode; 8N
- D. manual mode; 8P

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 014

Given the following conditions:

- A loss of offsite power has occurred.
- All equipment has started and is operating as designed.

Which one of the following describes how Containment temperature is controlled under these conditions?

- A. All Containment Air Recirculation Fans automatically sequence onto the EDGs.
- B. Containment Air Recirculation Fans will automatically start when their control switches are placed in 'AUTO AFTER STOP'.
- C. Containment Air Recirculation Fans must be manually started as necessary to control containment temperature.
- D. Containment Air Recirculation Fans "A" and "B" automatically sequence onto the EDGs. Fan "C" must be manually started on the bus it is aligned to.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 015

The Unit is operating at 80% power. All systems are in NSA.

Smoke is detected in the vicinity of MCC1-E5, and as a result the operating crew de-energizes MCC1-E5.

Subsequently, a LOCA inside Containment results in a Reactor Trip, Safety Injection and a Containment Spray actuation.

Which one of the following describes the response of the Quench Spray System?

Quench Spray Pump...

- A. "A" starts and injects. "B" starts but does not provide spray flow.
- B. "B" starts and injects. "A" starts but does not provide spray flow.
- C. "A" and "B" both start, but neither train provides spray flow.
- D. "A" and "B" both start and both trains provide spray flow.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 016

Given the following conditions:

- A LOCA has occurred.
- The following engineered safeguards actuations have initiated:
 - SI
 - CIA
 - CIB
 - MSLI
- All equipment is operating as designed.

Which one of the following is the **MINIMUM** necessary to electrically stop a Quench Spray Pump?

- A. Reset SI only.
- B. Reset CIB only.
- C. Reset SI and CIA. (Both required).
- D. Reset SI, CIA and CIB. (All required).

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 017

Given the following conditions:

- Following a Reactor Trip due to a complete loss of CCR, all RCPs are stopped.
- All systems are operating as designed.

Which one of the following describes the response of the core exit TCs following trip of the RCPs?

Core exit temperature initially _____ and then _____.

- A. rises; drops
- B. drops; rises
- C. rises; stabilizes
- D. drops; stabilizes

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 018

With the Unit operating at 80% power, all systems in NSA, [1WR-P-1A], Reactor Plant River Water Pump trips. As a consequence, Reactor Plant River Water is available to the...

- A. "B" LHSI Pump [1SI-P-1B] only.
- B. "B" HHSI Pump [1CH-P-1B] only.
- C. "A" LHSI Pump [1SI-P-1A] and the "B" LHSI Pump [1SI-P-1B].
- D. "A" HHSI Pump [1CH-P-1A] and the "B" HHSI Pump [1CH-P-1B].

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 019

Given the following conditions:

- A LOCA has occurred.
- The operating crew is performing actions of ES-1.2, Post LOCA Cooldown And Depressurization.
- Pressurizer level is stable at 58%.
- RCS pressure is stable at 1680 psig.
- The Unit Supervisor determines that a Charging/HHSI pump can be stopped in accordance with EOP Attachment 7-A, Criteria For Stopping 1 Of 2 Running Charging/HHSI Pumps, Subcooled Conditions.

When the RO stops the Charging/HHSI Pump, which one of the following describes the Pressurizer level response?

- A. PRZR level will remain at its current value.
- B. PRZR level will rise until charging is realigned to the VCT.
- C. PRZR level will drop until normal charging and letdown are restored.
- D. PRZR level will drop until RCS pressure stabilizes at a lower value, then will stabilize.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 020

Given the following:

- The Unit is operating at 90% power with all systems in NSA.
- [GW-TK-1A], Gaseous Waste Decay Tank discharge is in progress.
- [1GW-F-1A], GW Disposal Blower is operating.
- [TV-1GW-103], GW Decay Tank Disch to CTWR Valve is open.
- [TV-1GW-103A2], GW Decay Tank Bleed Valve is open.
- [1GW-D-1-1A], GW Disposal Damper associated with the "A" GW Disposal Blower [1GW-F-1A] is open.

Then, [RM-1GW-108B], GW Disposal Blower Discharge Radiation Monitor alarms on High-High gaseous activity.

Which one of the following completely describes the Gaseous Waste System automatic response?

- A. [1GW-F-1A], GW Disposal Blower trips.
- B. [1GW-D-1-1A], GW Disposal Damper shuts.
- C. Valve [TV-1GW-103] and valve [TV-1GW-103A2] shut.
- D. Blower [1GW-F-1A] trips and damper [1GW-D-1-1A] shuts.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 021

The Unit is operating at 80% power with all systems in NSA, when a Small Break LOCA in containment results in a Reactor Trip and SI Signal.

- 4160 Volt Emergency Bus "1AE" supply breaker from offsite power trips.
- No. 1 EDG fails to start.

Which one of the following describes the status of the charging pumps?

Charging Pump "A" _____; Charging Pump "B" _____.

- A. running; running
- B. not running; running
- C. running; not running
- D. not running; not running

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 022

Given the following conditions:

- A loss of offsite power has occurred.
- RCS cooldown is being performed in accordance with ES-0.2, Natural Circulation Cooldown.
- RCPs cannot yet be started.
- The RO is depressurizing using auxiliary spray.
- Pressurizer level rapidly rises from 24% to 66%.

Which one of the following describes the reason for the Pressurizer level increase?

- A. Loss of Secondary Heat Sink.
- B. Portions of the RCS have reached saturation temperature.
- C. HHSI flow is refilling the Pressurizer as RCS pressure drops.
- D. Cooldown rate is not high enough to maintain Pressurizer level with auxiliary spray in service.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 023

Given the following:

- A Unit startup is in progress and all nuclear instrumentation is observed to be operating normally.
- Power Range Channel N-43 is indicating 11%.
- Power Range Channels N-41, N-42 and N-44 are indicating 9%.

Which one of the following is correct concerning Reactor Protection System trips?

- A. Power Range, high setpoint trip and Source Range high flux trip are enabled.
- B. Power Range, low setpoint trip and Source Range high flux trip are disabled.
- C. Power Range, high setpoint trip and Intermediate Range high flux trip are enabled.
- D. Power Range, low setpoint trip and Intermediate Range high flux trip are disabled.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 024

Given the following conditions:

- The Unit was operating at 68% power.
- An automatic Reactor Trip occurred.
- The cause of the trip was determined to be LOW flow in RCS Loop "A".
- The cause of the trip was determined to be an instrument failure.

Which one of the following input failures caused the Reactor Trip?

- A. The Loop "A" high pressure side flow input failed high.
- B. The Loop "A" high pressure side flow input failed low.
- C. One Loop "A" low pressure side flow input failed high.
- D. One Loop "A" low pressure side flow input failed low.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 025

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- [PT-1MS-446], First Stage Pressure is selected for Tref input to Rod Control System. It begins to fail DOWNSCALE.

Assuming **NO** action by the crew, which one of the following primary plant parameters will initially **INCREASE** as a result of the transmitter failure?

- A. Charging flow
- B. RCS Tavg
- C. Reactor power
- D. RCS loop Delta-T

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 026

Given the following conditions:

- A Unit startup is in progress with the main steam stop valves closed.
- The operating crew is preparing to warm up the main steam lines.

Which one of the following actions will cause "A" SG pressure to **INCREASE** in this plant configuration?

- A. Decrease SG Atmospheric Dump Valve controller output.
- B. Decrease SG Atmospheric Dump Valve controller setpoint.
- C. Increase Main Steam Dump pressure controller output.
- D. Increase Main Steam Dump pressure controller setpoint.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 027

Given the following conditions:

- A Large Break LOCA has occurred.
- Both hydrogen recombiners are in service.
- The following Control Room annunciator alarm light turns 'OFF':
 - [A2-18], A-HYDROGEN RECOMBINER RUNNING

Which one of the following describes the effect on the removal of hydrogen from Containment?

- A. Hydrogen concentration will remain below 4% with only one recombiner in operation.
- B. Hydrogen concentration will rise above 4% but remain below 13% with only one recombiner in operation.
- C. Hydrogen concentration will remain below 4% only if the Containment Purge System is placed in service in addition to the recombiner.
- D. Hydrogen concentration will remain below 4% only if Containment Spray is placed in service in addition to the recombiner.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 028

The Unit is in Mode 1. All systems are in NSA.

Which one of the following describes the normal operation of the Spent Fuel Pool Purification System?

- A. Two purification circulating pumps take suction from the spent fuel pool skimmers. Each pump discharges through a separate filter and ion exchanger.
- B. Either or both of two purification circulating pumps take suction from submerged piping in the Spent Fuel Pool. Each pump discharges through a separate filter and a common ion exchanger.
- C. One purification circulating pump takes suction on submerged piping in the Spent Fuel Pool. The other pump is aligned for RWST purification. Each pump discharges through separate filters and ion exchangers.
- D. One purification pump takes suction from the spent fuel pool skimmers. The other pump is aligned for RWST purification. Each pump discharges through separate filters and ion exchangers.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 029

Given the following conditions:

- A Unit startup is in progress following a mid-cycle outage.
- The reactor is critical at 1E^{-8} amps.

A condenser steam dump valve fails partially open.

Assuming **NO** action by the operating crew, which one of the following describes the immediate effect on the plant?

- A. RCS Temperature **INCREASES**; Power **INCREASES**
- B. RCS Temperature **DECREASES**; Power **INCREASES**
- C. RCS Temperature **INCREASES**; Power **DECREASES**
- D. RCS Temperature **DECREASES**; Power **DECREASES**

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 030

Which one of the following conditions will **PREVENT** the No. 1 EDG output breaker from closing to energize 4KV Bus "1AE" following a loss of power?

- A. [ACB-1A10], Emergency Bus "1AE" Feeder Breaker has an undervoltage trip.
- B. [ACB-1A10], Emergency Bus "1AE" Feeder Breaker has an overcurrent trip.
- C. [ACB-41C], Normal 4KV Bus "1A" Feeder Breaker has an overcurrent trip with bus "1AE" normal feeder breaker control switch position in 'Auto After Close'.
- D. [ACB-41C], Normal 4KV Bus "1A" Feeder Breaker has an undervoltage trip with bus "1AE" normal feeder breaker control switch position in 'Auto After Close'.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 031

Given the following conditions:

- The Unit is in Mode 6.
- RHR is in service.
- RCS temperature is 139°F.
- RCS boron concentration is 1822 ppm.
- RCS drain down is in progress in preparation for refueling.

[MOV-1RH-758], RHR Heat Exchanger Flow Control Valve begins to drift in the closed direction due to an electrical problem.

Assuming **NO** action by the operating crew, which one of the following describes the effect of this failure on plant operation?

- A. RCS cooldown to a temperature below the RCS boron solubility limit.
- B. Loss of NPSH to the operating RHR pump due to increased temperature.
- C. OPPS actuation due to overpressurization of the RCS.
- D. Loss of RHR letdown and uncontrolled RCS level increase.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 032

Given the following conditions:

- The Unit is in Mode 4.
- RCS cooldown is in progress on RHR Train "B".
- CCR Train "A" and Train "B" are aligned to provide cooling water to RHR.

Which one of the following describes the flow limits placed on the CCR System in this alignment, and the method used to determine actual flow?

- A. Total CCR system flow is limited to 4500 gpm. The actual flow is determined by adding the flows on the 8 inch, 14 inch, and 24 inch CCR headers.
- B. Each CCR pump is limited to a total of 6500 gpm. The actual flow is determined by adding the flows on the 8 inch, 14 inch, and 24 inch CCR headers.
- C. Total CCR flow through the RHR heat exchanger is 4500 gpm. The actual flow is determined directly from the 24 inch CCR header.
- D. Total CCR flow through the RHR heat exchanger is 6500 gpm. The actual flow is determined directly from the 24 inch CCR header.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 033

Surveillance Verification Log L5 is being performed for the 0000 - 0800 shift.

The RO determines that the NIS Cabinet power range indication is NOT within allowable limits.

Per 10M-54.1.A, Station Logs, which one of the following describes how this is required to be documented in the L5 log?

- A. Circle all readings in red pen that are not in compliance. Unit Supervisor must initial the L5 log in the time column next to the unsatisfactory check.
- B. Circle all readings in red pen that are not in compliance. Details of the unsatisfactory check must be documented in the remarks section. Unit Supervisor must review the log at least once every shift.
- C. Mark 'UNSAT' in the time column opposite the unsatisfactory check. Record details of the check in the remarks section. Unit Supervisor must review the log prior to end of shift.
- D. Mark 'UNSAT' in the time column opposite the unsatisfactory check. Record details of the check in the remarks section. Unit Supervisor must initial the L5 log in the time column next to the UNSAT comment.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 034

Given the following:

- [1QS-MR-1A], Refueling Water Refrigeration Unit is 'ON'.
- One refueling water recirculation pump is running in 'SLOW'.
- [TS-1QS200A2], Refrigeration Unit Operating Thermostat is actuated.

Using the diagram provided, which one of the following describes the status of the refueling water refrigeration unit?

[1QS-MR-1A], Refueling Water Refrigeration Unit is...

- A. started, and liquid line solenoid is energized to open.
- B. stopped, and liquid line solenoid is energized to close.
- C. started, and liquid line solenoid is deenergized to open.
- D. stopped, and liquid line solenoid is deenergized to close.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 035

Given the following conditions:

- The Unit has been at 100% power for 3 weeks. All systems are in NSA.
- RCS boron concentration is 1100 ppm.
- A controlled power reduction to 50% is to be performed.

Using the references provided and maintaining control rods at their current position, which one of the following describes the **MINIMUM** amount of boric acid required to initially maneuver the plant to 50% power?

- A. 900 gallons
- B. 1100 gallons
- C. 1300 gallons
- D. 1500 gallons

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 036

When performing an OST, which one of the following conditions **PROHIBITS** the use of 'N/A' in the sign-off spaces provided?

- A. Performance of partial tests.
- B. Inability to perform the OST as written.
- C. Performing an OST that pre-establishes conditions for non-performance of steps.
- D. Performance of steps that cannot be performed due to plant conditions, but do not change the intent of the procedure.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 037

Given the following conditions:

- A reactor startup is in progress.
- Control Bank "A" withdrawal is in progress.
- The last two 1/M plots indicate that criticality will be achieved on Control Bank "B" at approximately 100 steps.
- Estimated Critical Position is Control Bank "C" at 144 steps.

Per 1OM-50.4.D, Reactor Startup From Mode 3 To Mode 2, which one of the following actions is required for these conditions?

- A. Trip the reactor and initiate emergency boration.
- B. Stop the startup and determine whether criticality will be within 500 pcm of the ECP prior to proceeding.
- C. Insert all control banks to zero steps, verify shutdown margin and recalculate the ECP.
- D. Continue the startup to obtain one additional 1/M data point to validate the accuracy of the plot.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 038

Given the following conditions:

- The control rod full out position is 230 steps.
- The required bank overlap for the current fuel cycle is 102 steps.

During rod withdrawal, when Control Bank "B" reaches full out position, what will be the position of Control Bank "C"?

- A. 000 steps
- B. 102 steps
- C. 128 steps
- D. 230 steps

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 039

The Unit Supervisor has directed a Unit shutdown based on RCS activity exceeding TS 3.4.8 limits.

In the event of a subsequent SGTR, which one of the following actions is designed to limit the release of radioactivity?

- A. MSIVs are closed.
- B. SG atmospheric dump valve setpoints are raised.
- C. RCS is cooled down below 500°F.
- D. Maximum condensate polishers are placed in service.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 040

The Unit is in Mode 5. Preparations are being made to enter Containment.

Per 1OM-44C.4.A, Containment Purge Supply And Exhaust System Startup, which one of the following describes the correct sequence for initiating a containment purge to the ventilation vent?

- A. Open supply and exhaust dampers, start [1VS-F-5], CNMT Purge Exhaust Fan. If desired, start [1VS-HV-5], CNMT Purge Vent Sup Fan after ensuring the NORMAL/REFUELING control switch is in the 'NORMAL' position.
- B. Open supply and exhaust dampers, start [1VS-F-5], CNMT Purge Exhaust Fan. If desired, start [1VS-HV-5], CNMT Purge Vent Sup Fan after ensuring the NORMAL/REFUELING control switch is in the 'REFUELING' position.
- C. Start [1VS-F-5], CNMT Purge Exhaust Fan. Ensure the supply and exhaust dampers are open. Place the NORMAL/REFUELING control switch in the 'NORMAL' position, and start [1VS-HV-5], CNMT Purge Vent Sup Fan.
- D. Start [1VS-F-5], CNMT Purge Exhaust Fan. Ensure the supply and exhaust dampers are open. Place the NORMAL/REFUELING control switch in the 'REFUELING' position, and start [1VS-HV-5], CNMT Purge Vent Sup Fan.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 041

Who, by title, can authorize a person to receive a radiation dose in excess of the Beaver Valley Administrative TEDE limits per 1/2-ADM-1631, Exposure Control?

- A. Site Senior Vice President
- B. Plant General Manager
- C. Superintendent, Operations
- D. Manager, Health Physics

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 042

The Unit is at 97% power. All systems are in NSA.

The RO withdraws control rods 2 steps for Tavg control. When the In-Hold-Out switch is released, rod motion continues.

The following alarms are received:

- [A4-46], Tavg Deviation from Tref
- [A4-51], Loop Tavg High

The rod motion stops prior to any operator action occurring.

Which one of the following describes an **INITIAL** reactivity effect of the rod motion?

- A. The positive reactivity added by FTC and MTC result in a higher total power defect.
- B. The negative reactivity added by FTC and MTC result in a higher total power defect.
- C. The positive reactivity added by FTC and MTC result in a lower total power defect.
- D. The negative reactivity added by FTC and MTC result in a lower total power defect.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 043

Given the following conditions:

The Unit is at 100% power with all systems in NSA.

- [A4-97], ROD CONTROL SYSTEM NON-URGENT ALARM illuminates.
- [A4-126], ROD BOTTOM ROD DROP is illuminated.
- One Control Bank "D" rod is indicating '0' steps.
- The RO places rod control in 'MANUAL'.
- Other Control Room annunciators illuminate as expected for plant conditions.
- Reactor power indicates as follows:
 - N41 - 100.1%
 - N42 - 103.3%
 - N43 - 100.1%
 - N44 - 94.7%

Which one of the following interlocks or protective features must be cleared before automatic rod withdrawal may be reinstated?

- A. The Rod Control System Non-Urgent condition must be cleared.
- B. The 'Loop OP Delta T Auto Turbine Runback Block Auto Rod Withdrawal' circuitry must be reset.
- C. The 'NIS Power Range High Setpoint Overpower Rod Stop Block Auto Rod W/D' must be cleared.
- D. The 'Power Range Channel Deviation' must be cleared at the NIS Comparator and Rate Drawer.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 044

Given the following conditions:

A load rejection has occurred from 100% power. The plant has stabilized at 82% power.

- The RO determines that 2 Control Bank "D" rods did not move during the load rejection.
- The rods are approximately 16 steps above the remainder of Control Bank "D".
- The Rod Control System Urgent Failure and Non-Urgent Failure alarms are NOT lit.

Which one of the following describes the required action for this condition?

- A. Initiate a boration to increase shutdown margin by an amount equal to the stuck rod worth, and align the remainder of Control Bank "D" rods with the stuck rods.
- B. Initiate boration to increase shutdown margin by an amount determined by the shutdown margin OST and commence a plant shutdown to Mode 3.
- C. Trip the reactor and initiate safety injection to borate the RCS to achieve adequate shutdown margin.
- D. Trip the reactor and commence emergency boration in accordance with FR-S.1, Response To Nuclear Power Generation/ATWS.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 045

The Unit is at 60% power.

- [1SI-P-1A], LHSI Pump is out of service.
- [1QS-P-1A], Quench Spray Pump is out of service.

A Large Break LOCA occurs. The operating crew takes action in accordance with E-1, Loss Of Reactor Or Secondary Coolant.

The following conditions currently exist:

- | | |
|------------------------|----------------------------|
| • Containment pressure | 32 psig, DECREASING slowly |
| • RCS pressure | 100 psig, STABLE |
| • Pressurizer level | Offscale LOW |

All actuations have occurred as required.

With the reference provided, if the RWST was at its minimum level for operability when the event occurred, what is the approximate **MINIMUM** time before transition to ES-1.3, Transfer To Cold Leg Recirculation is required?

- A. One hour
- B. Two hours
- C. Three hours
- D. Four hours

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 046

Which one of the following describes the operation of RCPs during the performance of FR-C.1, Response To Inadequate Core Cooling?

- A. If RCPs are available, they are started early in the event to provide forced flow ONLY if seal injection and CCR are available.
- B. If RCPs are available, they are started early in the event to provide forced flow EVEN IF seal injection and CCR are NOT available.
- C. At least 1 RCP is started to provide forced flow and mixing of RCS water after secondary depressurization has resulted in SI accumulator injection.
- D. At least 1 RCP is started to provide forced flow of the RCS when secondary depressurization is ineffective in restoring adequate core cooling.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 047

Given the following conditions:

- An ATWS has occurred.
- The operating crew is performing the actions of FR-S.1, Response To Nuclear Power Generation/ATWS.
- The RO has initiated emergency boration.
- All equipment has operated as designed.
- SI is NOT actuated.
- RCS pressure is 2210 psig and trending DOWN.
- Tavg is 567°F and trending DOWN.

Which one of the following describes plant response to initiation of the boration?

- A. Boric Acid Tank level will drop at a rate approximately equal to charging flow.
- B. Volume Control Tank level will drop at a rate approximately equal to charging flow.
- C. Refueling Water Storage Tank level will drop at a rate approximately equal to charging flow.
- D. Pressurizer level will rise at a level approximately equal to charging flow.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 048

Given the following conditions:

- The Unit is in Mode 5.
- [1CC-E-1A], CCR Heat Exchanger is in service.
- [TCV-1CC-100], CCR Temperature Control Valve is in 'MANUAL'.
- The operating CCR pump trips on overcurrent.
- There are no CCR pumps in standby.

Prior to any action by the operating crew, which one of the following describes system temperature response at the outlet of 1CC-E-1A over the next 10 seconds?

- A. River Water temperature will RISE.
CCR temperature will RISE.
- B. River Water temperature will DROP.
CCR temperature will DROP.
- C. River Water temperature will RISE.
CCR temperature will DROP.
- D. River Water temperature will DROP.
CCR temperature will RISE.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 049

Given the following conditions:

- Reactor Trip testing is in progress on Train "A".
- Reactor Trip Breaker "A" is open.
- Reactor Trip Bypass Breaker "A" is closed.
- A transient occurs requiring a reactor trip.
- The RO attempts to manually trip the reactor but the reactor does NOT trip.

Which one of the following describes a failure that has contributed to the reactor trip failure?

- A. Reactor Trip Breaker "B" Undervoltage Trip coil failed to energize.
- B. Reactor Trip Breaker "B" Shunt Trip coil failed to deenergize.
- C. Reactor Trip Bypass Breaker "A" Undervoltage Trip coil failed to deenergize.
- D. Reactor trip Bypass Breaker "B" Shunt Trip coil failed to energize.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 050

Given the following conditions:

- The Unit is operating at 80% power when air leakage into the condenser resulted in a rising condenser backpressure.
- A load reduction is initiated at a rate of 5% per minute in accordance with AOP-1.51.1, Emergency Shutdown.
 - Five minutes after the load reduction was commenced, condenser backpressure has risen to 5.5 In. Hg. Abs.
 - Ten minutes after the load reduction was commenced, condenser backpressure has risen to 6 In. Hg. Abs. and is continuing to slowly rise.

What operator action is required?

- A. Trip the reactor and go to E-0, Reactor Trip Or Safety Injection.
- B. Trip the turbine and go to AOP-1.26.1, Turbine And Generator Trip.
- C. Continue the load reduction and place a priming ejector (Hogger) into service.
- D. Continue the load reduction. A priming ejector (Hogger) should not be placed into service.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 051

Given the following conditions:

- A loss of power to 120 VAC Vital Bus II has occurred.
- The operating crew is attempting to restore power to the bus.

Per 1OM-38.4.AAC, Vital Bus II Trouble, which one of the following describes the reason for placing the Vital Bus Transfer Toggle Switch in the 'TO BYPASS' position under these circumstances?

- A. Allows operation of the inverter manual bypass switch.
- B. Provides for manual transfer of the inverter static switch.
- C. Bypasses the inverter synchronization relay to allow re-energization of the inverter from its normal source.
- D. Isolates the inverter static switch from the alternate power source in the case of a vital bus inverter failure.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 052

Annunciator [A11-123], MOTOR DRIVEN FIRE PUMP RUNNING is in alarm and is valid. This indicates a fire in which one of the following areas:

- A. Main Transformer
- B. Cable Tray Mezzanine
- C. Diesel Generator Building "A"
- D. Turbine Generator Bearings and Enclosure

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 053

Given the following conditions:

- A small fire has developed in the Control Room.
- The Shift Manager has determined that a Control Room evacuation is required.
- A manual reactor trip has been initiated and all control rods have been verified fully inserted.

Which one of the following describes the **MINIMUM** action required to verify Turbine Trip?

- A. Verify turbine throttle valves all closed or verify governor valves all closed prior to exiting the Control Room.
- B. Verify turbine throttle valves all closed and verify governor valves all closed prior to exiting the Control Room.
- C. Verify turbine throttle valves all closed or verify governor valves all closed in the Turbine Building prior to manning the Emergency Shutdown Panel.
- D. Verify turbine throttle valves all closed and verify governor valves all closed in the Turbine Building prior to manning the Emergency Shutdown Panel.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 054

Given the following conditions:

- The Unit was operating at 100% power.
- A Reactor Trip occurred due to a LOCA.
- All Safety Injection Systems FAILED to operate.
- FR-C.1, Response To Inadequate Core Cooling has been entered.
 - The Unit Supervisor has directed the depressurization of all intact SGs to 150 psig using the condenser steam dumps.
 - All MSIVs are open and the condenser is available.
 - The steam dump controller (AM-1MS-464B) is in manual.
 - The steam dump control mode selector switch is in the STM PRESS position, and SG depressurization is underway.
 - PRZR pressure is > 1950 psig, and the Block Steamline SI Switches have NOT been placed in the 'BLOCK' position.
 - As the SG depressurization progresses, the steam flow automatically stops.

Which one of the following has caused the steam flow to stop?

- A. Steam generator pressure has reached 150 psig, or containment isolation due to exceeding 1.5 psig pressure setpoint in containment.
- B. Steam header pressure has dropped below the setpoint on AM-1MS-464B, or Tavg is below 541°F and no action has been taken to defeat the Tavg interlock.
- C. Tavg is below 541°F and no action has been taken to defeat the Tavg interlock, or main steamline isolation due to exceeding the low steam pressure rate sensitive setpoint.
- D. Containment isolation due to exceeding 1.5 psig pressure setpoint in containment, or steam header pressure has dropped below the setpoint on AM-1MS-464B.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 055

Given the following conditions:

- A Reactor Trip and Safety Injection have occurred.
- The operating crew was performing the actions of E-1, Loss Of Reactor Or Secondary Coolant.
- The Unit Supervisor was concerned about conflicting indications and entered ES-0.0, Rediagnosis.
- There is an increasing trend on [RM-1MS-101], Auxiliary Feed Pump Turbine Exhaust Monitor and [RM-1MS-100A], Main Steam Safety Valve Effluent Monitor.

Which one of the following describes how the operating crew will transition to the correct procedure?

- A. Go directly to the appropriate E-3 or ECA-3 series procedure.
- B. Return to E-0 diagnostic steps to verify indications that will confirm the event in progress.
- C. Return to E-1 step in effect and use the Symptomatic Response/Unexpected Conditions page to direct entry to E-3.
- D. Direct Chemistry sample of SGs to confirm radiation monitor readings prior to making a determination of appropriate procedure entry.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 056

Given the following conditions:

- A Main Steam Line Break has occurred.
- All equipment actuated as required.
- The operating crew has isolated the faulted SG.
- The Unit Supervisor has directed transition to ES-1.1, SI Termination.
- SI, CIA, and CIB have been reset.
- RCS pressure is 1775 psig and rising slowly.
- There are NO other indications of RCS leakage.

Which one of the following describes the sequence of steps to terminate SI?

- A. Stop 1 HHSI pump.
Check RCS pressure stable and align normal charging.
Stop BOTH LHSI pumps.
- B. Stop 1 HHSI pump.
Check RCS pressure stable and align normal charging.
Stop 1 LHSI pump. Ensure RCS pressure remains stable, then stop the second LHSI pump.
- C. Align normal charging.
Check RCS pressure stable and stop 1 HHSI pump.
Stop BOTH LHSI pumps.
- D. Align normal charging.
Check RCS pressure stable and stop 1 HHSI pump.
Stop 1 LHSI pump. Ensure RCS pressure remains stable, then stop the second LHSI pump.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 057

Given the following conditions:

- A Small Break LOCA has occurred outside containment.
- ECA-1.2, LOCA Outside Containment has been entered.
- RCS pressure is slowly dropping.
- One HHSI pump is injecting.

As valves are being closed in an effort to identify and isolate the leak, a second HHSI pump is made available; the pump is started and is injecting.

RCS pressure begins slowly rising.

Which one of the following is correct regarding adherence to the EOPs?

The operating crew is to...

- A. continue in ECA-1.2 until Mode 4 can be entered.
- B. continue in ECA-1.2 until break isolation is verified using other means.
- C. exit ECA-1.2 and transition to E-1, Loss Of Reactor Or Secondary Coolant.
- D. exit ECA-1.2 and transition to ECA-1.1, Loss Of Emergency Coolant Recirculation.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 058

The Unit is operating at 100% power when the following conditions occur:

- A PRZR spray valve sticks open and PRZR pressure has lowered to 1800 psig.
- Reactor Trip Breakers are 'SHUT'.
- Neutron flux is NOT dropping.

Which one of the following describes an Immediate Manual Action?

- A. Verify auxiliary feedwater status.
- B. Verify main steam line isolation.
- C. Isolate condenser steam dump valves.
- D. Initiate emergency boration of the RCS.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 059

Pressurizer Relief Tank pressure indicates 15 psig on PI-1RC-472. The operating crew suspects that a PORV opened inadvertently and is now stuck partially open.

Which one of the following indications confirm that a PORV is stuck partially open?

- A. PORV relief line temperature stabilized at 213°F. PRZR safety relief line temperatures indicate 180°F and very slowly rising.
- B. PORV relief line temperature stabilized at 250°F. PRZR safety relief line temperatures indicate 217°F and very slowly rising.
- C. PORV relief line temperature stabilized at 213°F. PRZR safety relief line temperatures indicate 110°F and stable.
- D. PORV relief line temperature stabilized at 250°F. PRZR safety relief line temperatures indicate 110°F and stable.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 060

Given the following conditions:

- The Unit is at 100% power, steady state. All systems are in NSA.
- Pressurizer level is on program and stable.
- Pressurizer pressure is 2235 psig and stable.
- Charging flow on FI-1CH-122 indicates 90 GPM.

A malfunction results in the loss of Pressurizer heaters. When heaters are restored, the following conditions exist:

- Pressurizer level is on program and stable.
- Pressurizer pressure is 2000 psig.

Which one of the following describes the approximate value for charging flow indication on FI-1CH-122?

- A. 0 GPM
- B. 80 GPM
- C. 90 GPM
- D. 100 GPM

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 061

Given the following conditions:

- A reactor startup is in progress.
- Both Intermediate Range channels indicate approximately 5 E^{-11} amps.
- Source Range Channel N-31 fails DOWNSCALE.

Which one of the following describes the required operator response and the reason for the response?

- A. Suspend the reactor startup; with only one source range channel operable, the minimum required Source Range High Flux Trip protection is not met.
- B. Continue the reactor startup; with only one source range channel operable; 48 hours is allowed to restore two channels to service.
- C. Suspend the reactor startup; source range channels are not required to trip the reactor; however, the source range monitoring functions must be available.
- D. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 062

Given the following conditions:

- A Small Break LOCA has occurred.
- The operating crew is performing the actions of ES-1.2, Post LOCA Cooldown And Depressurization.
- Safety Injection pumps have been stopped.
- Normal charging is aligned.
- The crew is depressurizing the RCS using normal spray.

Which one of the following describes the strategy and the basis for the continuing depressurization?

- A. Maximize subcooling to ensure continued RCP operation.
- B. Minimize subcooling to reduce RCS break flow.
- C. Maximize subcooling to prevent a challenge to the Core Cooling Critical Safety Function.
- D. Minimize subcooling to ensure Pressurizer level remains above the lower limit to allow heater operation during the RCS cooldown.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 063

Given the following conditions:

The Unit is at 100% power. All systems are in NSA.

The following alarms are received in the Control Room:

- [RM-1SV-100], Condenser Air Ejector Vent High
- [RM-BD-101], High Capacity SG Blowdown High-High
- [RM-1MS-102A], N-16 Steam Generator "A" Leak Monitor High-High

RM-BD-101 and RM-1MS-102A are stable at or near their alarm setpoints.
RM-1SV-100 is stable above the High alarm setpoint.

Which one of the following describes the significance of the alarm status listed above?

- A. The two radiation monitors in High-High alarm provide the threshold for tripping the reactor and initiating Safety Injection.
- B. The alarm status of the radiation monitors give an approximate value for RCS primary-to-secondary leak rate.
- C. The rate of increase of any of the three radiation monitors provides the threshold for tripping the reactor and initiating Safety Injection.
- D. The alarm status of the radiation monitors determines the course of action taken for charging and letdown to provide an accurate estimate of the leak rate.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 064

Given the following conditions:

- The Unit was operating at 100% power when a Reactor Trip occurred on low Pressurizer pressure.
- A Steam Generator Tube Rupture was diagnosed and E-3, Steam Generator Tube Rupture was entered.
- E-3, Step No. 31, "Control RCS Pressure And Charging Flow To Minimize RCS-To-Secondary Leakage" is being performed (attached).

Given the following control room indications:

- SG "C" blowdown sample indicates high radiation.
- SG "C" NR level is 32% and dropping.
- Feed flow has been isolated to SG "C".
- SG "A" and "B" levels are slowly lowering.
- PRZR level is 63% and rising.

Which one of the following describes the operator action?

- A. Depressurize RCS.
- B. Lower charging flow.
- C. Turn on PRZR heaters.
- D. Depressurize RCS and lower charging flow.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 065

The Unit is at 50% power during a power increase to 100%.

The following alarms are received in the Control Room:

- 1A, 1B, 1C SG Level Deviation
- 1A, 1B, 1C SG Level Low

The PO determines the following for all 3 SGs:

- SG level is DECREASING.
- Steam flow is STABLE.
- Feed flow is DECREASING.
- Feedwater Regulating Valve positions are all going OPEN.
- Feedwater header pressure is approximately 950 psig and trending DOWN slowly.

Assuming **NO** action has been taken by the operating crew, which one of the following events is the cause of these indications?

- A. Secondary Load Rejection
- B. Loss of Feedwater
- C. [PT-1MS-446], First Stage Pressure Transmitter failed LOW
- D. [PT-1MS-446], First Stage Pressure Transmitter failed HIGH

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 066

The Unit is operating at 60% power when the following alarms are received.

- [A9-100], 125VDC BATTERY CHGR 1 FAILURE
- [A9-98], 125VDC BUS 1 VOLTAGE LOW

Several minutes after the alarms are received:

- The Unit continues to operate at 60% power.
- Control power remains available to EDG No.1 and 4160V Bus "1AE".
- 125VDC BUS 1 voltage indicates approximately 124VDC.
- [BAT-CHG1-1], Station Battery Charger Breaker has been verified closed and 480V MCC1-E9 is energized.

For the given indications, which one of the following describes the 125VDC Bus 1 status?

- A. Station Battery has failed. Battery Charger 1 is supplying the bus.
- B. Battery Charger 1 has failed. Station Battery is supplying 125VDC Bus 1.
- C. Station Battery and Battery Charger 1 have failed. 125VDC Bus 1 is deenergized.
- D. Battery Charger 1 and Station Battery are operating normally. Battery Charger 1 is supplying 125VDC Bus 1.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 067

Given the following conditions:

- The Unit was operating at 100% power when a steam line break occurred.
- A high containment pressure condition resulted in a Reactor Trip signal. However, the reactor failed to trip automatically or manually.
- All other equipment functions as designed.
- Containment pressure is 3.5 psig and RISING.
- The operating crew is performing actions of FR-S.1, Response To Nuclear Power Generation/ATWS.

Which one of the following describes the plant status when verifying emergency boration is established?

- A. One charging pump running; [MOV-1CH-350], Emergency Boration Isolation Vlv 'OPEN'; Boric Acid Transfer Pump [1CH-P-2A (2B)] in 'FAST' speed.
- B. Two charging pumps running; [MOV-1CH-350], Emergency Boration Isolation Vlv 'OPEN'; Boric Acid Transfer Pump [1CH-P-2A (2B)] in 'FAST' speed.
- C. One charging pump running; [MOV-1CH-115B (D)], RWST to Chg Pumps Suct Vlv 'OPEN'; [MOV-1CH-115C (E)], VCT Outlet to Chg Pumps Suct Vlv 'CLOSED', and [MOV-1SI-867A, C, (B)(D)], BIT Isol Vlvs 'OPEN'.
- D. Two charging pumps running; [MOV-1CH-115B (D)], RWST to Chg Pumps Suct Vlv 'OPEN'; [MOV-1CH-115C (E)], VCT Outlet to Chg Pumps Suct Vlv 'CLOSED', and [MOV-1SI-867A, C, (B)(D)], BIT Isol Vlvs 'OPEN'.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 068

Given the following conditions:

- A loss of heat sink has occurred.
- The operating crew is establishing RCS 'Bleed and Feed' in accordance with FR-H.1, Loss Of Secondary Heat Sink.
- The RO opens one PORV. He reports that the other two PORVs will NOT open.

Which one of the following describes the consequences of the PORV failures?

- A. A Red Path on the Core Cooling Critical Safety Function will develop due to loss of RCS inventory with no available makeup.
- B. RCS 'Feed and Bleed' cooling must be established to ensure sufficient SI flow at the operable PORV setpoint.
- C. The RCS may not depressurize quickly enough to ensure sufficient SI flow to provide RCS heat removal, and other RCS openings may have to be established.
- D. 'Bleed and Feed' cooling of the RCS must be terminated and secondary depressurization to inject condensate pump flow must be immediately initiated.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 069

Given the following conditions:

- The Unit is in Mode 6. All systems are in NSA.
- Refueling in progress. The Containment equipment hatch is closed.
 - [RIS-1RM-104A], Containment Purge Exhaust Monitor is in High-High alarm.
 - Containment Purge Supply and Exhaust Fans trip.
 - Containment Evacuation Alarm is sounding.

Which one of the following indications will provide direct confirmation of the event in progress?

- A. [RIS-1RM-215A], Containment Particulate Monitor
- B. [RIS-1VS-103A], Fuel Building Ventilation Exhaust Monitor
- C. [RIS-1VS-107A], Elevated Release Particulate Monitor
- D. [RM-1RM-218A], Control Room Radiation Monitor

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 070

As directed by ECA-0.0, Loss Of All AC Power, the operating crew places the charging pumps in Pull-To-Lock.

The defeat of the charging pump automatic start is to prevent...

- A. an uncontrolled over-pressurization of the RCS, and the resulting increased loss of RCS inventory through the RCP seals when power is restored.
- B. an excessive cooldown of the RCS due to injection of cold RWST water when power is restored.
- C. the unnecessary use of water that may be needed for long term recovery.
- D. a LOCA caused by thermal shock of the RCP seals when power is restored.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 071

The Unit is operating at 100% power, NSA when the following alarms are received:

- [A6-99], STA AIR COMPR 1A RCVR TANK PRESS LOW
- [A6-107], STA AIR COMPR 1B RCVR TANK PRESS LOW

[PI-1SA-101A/B], Station Air Compressor Receiver Pressures indicate 85 psig, and [PI-1SA-101], Station Air Main Header Pressure indicates 80 psig and stable.

Which one of the following indicates the plant response?

- A. Both station air compressors running; [TV-1SA-105], Station Air Header Isolation Valve open.
- B. One station air compressor running; [TV-1SA-105], Station Air Header Isolation Valve open.
- C. One station air compressor running; [TV-1SA-105], Station Air Header Isolation Valve closed.
- D. Both station air compressors running; [TV-1SA-105], Station Air Header Isolation Valve closed.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 072

The Unit is operating at 100% power when BOTH of the running condensate pumps trip.

Which one of the following describes the Main Feed Pump response?

- A. 1FW-P-1A and 1FW-P-1B trip immediately.
- B. 1FW-P-1A and 1FW-P-1B trip after an 8 second delay.
- C. 1FW-P-1A trips after an 8 second delay; 1FW-P-1B trips immediately.
- D. 1FW-P-1B trips after an 8 second delay; 1FW-P-1A trips immediately.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 073

Given the following conditions:

- The Unit is operating at 90% power. All systems are in NSA.
- "A" Main Feed Pump has tripped.
- The PO determines that the heater drain pumps and condensate pumps are operating normally.
- The Unit Supervisor refers to AOP-1.24.1, Loss Of Main Feedwater.

Which one of the following actions is required in accordance with AOP-1.24.1, Loss Of Main Feedwater?

- A. Trip the reactor and enter E-0, Reactor Trip Or Safety Injection.
- B. Reduce turbine load to less than 60% in accordance with AOP-1.51.1, Emergency Shutdown.
- C. Check the proper operation of [FCV-1FW-150A], Main Feed Pump "A" Recirculation Valve.
- D. Determine if suction pressure is adequate to attempt restart of "A" Main Feed Pump.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 074

Which one of the following will automatically trip [1FW-P-1A], Main Feedwater Pump?

- A. 2 out of 3 Lo-Lo level in any SG.
- B. Reactor Trip coincident with Low Tavg.
- C. 1FW-P-1A lube oil pressure at 4 psig.
- D. [MOV-1FW-150A], FW Pump Discharge Valve shut.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 075

While shutting down the plant during severe weather conditions, a Reactor Trip occurs from 90% power due to a loss of power to the Unit Station Service Transformer.

The following conditions exist.

- The plant is in natural circulation.
- MSIVs are closed.
- Both motor driven AFW pumps are in service feeding all 3 SGs.
- All SG wide range levels are approximately 35%.

Assuming **NO** operator action, if [MOV-1FW-151E], Auxiliary Feed Throttle Valve begins drifting open, the initial response of SG pressure is to _____ and level _____ rise above 81%.

- A. drop; will
- B. drop; will not
- C. rise; will not
- D. rise; will

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 076

A Reactor Trip occurs from 100% power due to a loss of main feedwater.

The following conditions exist:

- All RCPs are running.
- The turbine driven AFW pump is in service feeding all 3 SGs.
- Both motor driven AFW pumps tripped upon startup and remain unavailable.
- The turbine driven AFW pump speed has begun to slowly lower due to a malfunctioning governor.

Which one of the following describes the impact on Pressurizer level if the turbine driven AFW pump speed **CONTINUES** to lower?

Pressurizer level...

- A. rises due to increased primary to secondary heat transfer.
- B. rises due to decreased primary to secondary heat transfer.
- C. lowers due to increased primary to secondary heat transfer.
- D. lowers due to decreased primary to secondary heat transfer.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 077

Given the following conditions:

- Unit 1 is at 100% power. All systems are in NSA.
- A batch discharge of the contents of [1LW-TK-7A], Steam Generator Drain Tank 7A is in progress.
- [RM-1LW-104A], Liquid Waste Effluent Monitor has generated a High-High radiation signal.

How will this affect the Liquid Waste Disposal System?

- A. The Liquid Waste Effluent Trip Valve, TV-LW-105 receives an open signal and the Liquid Waste Effluent Low Range Flow Control Valve, FCV-LW-104-1 closes.
- B. The running steam generator drain tank pump will stop and the Liquid Waste Effluent Low Range Flow Control Valve, FCV-LW-104-1 closes.
- C. The running steam generator drain tank pump will stop and the Liquid Waste Effluent High Range Flow Control Valve, FCV-LW-104-2 closes.
- D. Both the Liquid Waste Effluent High and Low Range Flow Control Valves, FCV-LW-104-1 and FCV-LW-104-2 and the Liquid Waste Effluent Trip Valve, TV-LW-105 receive a signal to close.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 078

Unit 1 is operating at 100% with all systems in NSA.

- Unit 2 waste gas surge tank is being transferred to [1GW-TK-1B], Unit 1 Waste Gas Decay Tank.
- [A2-25], GASEOUS WASTE DECAY TANK 1B PRESSURE HIGH is alarming.
- 1GW-TK-1B pressure indicates 65 psig.

Per 1OM-19.4.B, Running With Unit 2 GW Surge TK Aligned To Unit 1 GW Decay Tk, which one of the following actions is required and why?

- A. Place GW-TK-1A in service to prevent the Unit 2 overhead gas compressor from stalling.
- B. Place GW-TK-1C in service to prevent overpressure on the Unit 2 waste gas surge tank.
- C. Place GW-TK-1A in service to maintain O2 analyzer within its operating limits.
- D. Place GW-TK-1C in service to equalize pressure and reseal 1GW-TK-1B relief valve.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 079

Given the following conditions:

- Unit 1 is in Mode 4.
- A Unit shutdown is in progress.
- [1GW-TK-1B], Waste Gas Decay Tank discharge is in progress.
- [RM-1GW-108A], Radiation Monitor is in High-High alarm.

Which one of the following will occur?

- A. [TV-1GW-103B2], GW Decay Tank Bleed Valve closes.
[FCV-1GW-105], Decay Tank Bleed Control Valve closes.
- B. [TV-1GW-103], GW Tank Discharge To Cooling Tower Valve closes.
[TV-1GW-110B], GW Decay Tank Sample Valve closes.
- C. [TV-1GW-103B2], GW Decay Tank Bleed Valve closes.
[TV-1GW-103], GW Tank Discharge To Cooling Tower Valve closes.
- D. [TV-1GW-103B2], GW Decay Tank Bleed Valve closes.
[TV-1GW-110B], GW Decay Tank Sample Valve closes.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 080

A precaution contained in 10M-17.2.A, Liquid Waste Disposal System states that two tanks containing radioactive liquid cannot be discharged at the same time.

Which one of the following describes the reason for this precaution?

- A. The discharge permit for discharging the contents of a liquid waste tank is based upon a dilution rate which includes cooling tower blowdown rate of both units.
- B. Pipe size restrictions in the effluent line could result in an overpressure condition if more than 1 waste tank pump is in operation.
- C. The limit prevents excessive wear on the foot valve in the discharge structure due to high flow rates.
- D. The common discharge point is only provided with a limited amount of dilution flow from the Unit 1 cooling tower blowdown.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 081

The Unit is operating at 100% power, NSA when a HIGH radiation signal is received on [RM-1RM-218A (B)], Control Room Area Monitors.

Which one of the following describes the component response for the Unit 1 Control Room Ventilation System?

- A. One Control Room Emergency Supply Fan, 1VS-F41A (B) starts immediately.
- B. The Control Room Air Intake Dampers, 1VS-D-40-1A (B) shut immediately.
- C. One Control Room Emergency Supply Fan, 1VS-F41A (B) starts after a time delay.
- D. The Control Room Air Exhaust Dampers, 1VS-D-40-1C (D) shut after a time delay.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 082

Given the following conditions:

- A Reactor Trip from 100% power has occurred as a result of a Small Break LOCA.
- HHSI pumps are running.
- LHSI pumps are running.
- Quench Spray pumps are running.

Subsequently, a fault on 125V DC Distribution Panel 2 results in a loss of 125V DC power to all loads serviced by the panel.

Which one of the following describes the impact on the AC electrical system?

4KV loads on 4160V Bus...

- A. "1DF" immediately trip; loads on 4160V Bus "1AE" also immediately trip.
- B. "1AE" continue to operate; loads on 4160V Bus "1DF" also continue to operate.
- C. "1DF" continue to operate; however, loads on 4160V Bus "1AE" immediately trip.
- D. "1AE" continue to operate; however, loads on 4160V Bus "1DF" immediately trip.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 083

Given the following conditions:

- The Unit is at 100% power with all systems in NSA.
- 4KV Bus "1AE" feeder breaker "1A10" tripped open.
- No faults exist on the "1AE" bus.
- No. 1 EDG failed to start manually or automatically.

After determining the cause of the EDG start failure, which one of the following actions is required prior to attempting to restart the No. 1 EDG?

- A. Cycle the 125VDC control power to No. 1 EDG output breaker "1E9".
- B. Cycle the No. 1 EDG manual start switch to 'STOP' and back to 'AUTO'.
- C. Place the control switch for breaker "1A10" in the 'OPEN' position.
- D. Simultaneously depress both 'STOP' pushbuttons for No. 1 EDG.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 084

Given the following conditions:

- Unit 1 is in Mode 6.
- Unit 2 is in Mode 1 with all systems in NSA.
- Movement of irradiated fuel is ongoing in the Unit 1 Containment.
- [RM-1RM-218A], Control Room Area Monitor has failed LOW.
- The FAIL light for the radiation monitor is 'OFF'.

In accordance with Technical Specification 3.3.3.1 (attached), what action, if any, is required for the above conditions?

- A. No action is required because the monitor is not required to be operable for this condition.
- B. Within ONE hour the respective Unit 2 Control Room monitor train shall be verified operable.
- C. Within ONE hour, verify that RM-1RM-218B, Control Room Area Monitor is operable.
- D. Within ONE hour, suspend all operations involving movement of irradiated fuel.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 085

The following alarms are received in the Control Room:

- [A11-65], DIESEL GEN BLDG A FIRE
- [A11-81], DIESEL GEN BLDG A FIRE PROT SYSTEM TROUBLE

Which one of the following describes the operation of the Fire Protection System?

The "A" Diesel Generator Building...

- A. Sprinkler System will discharge immediately.
- B. CO2 System will discharge immediately.
- C. Sprinkler System will discharge in 30 seconds.
- D. CO2 System will discharge in 30 seconds.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 086

Given the following conditions:

- A load rejection has occurred.
- Reactor power is currently 65%.
- T_{avg} is 6°F higher than T_{ref} .

How many banks of condenser steam dump valves will either be open or partially open?

- A. 1
- B. 2
- C. 3
- D. 4

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 087

Given the following conditions:

- The Unit was operating at 28% power.
- All offsite power was lost.
- All equipment functioned as designed.

Which one of the following describes the approximate steady-state T-cold value 30 minutes following the loss of power?

- A. 541°F
- B. 543°F
- C. 547°F
- D. 551°F

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 088

Given the following conditions:

- A Reactor Trip and Safety Injection have occurred.
- The crew is performing EOP Attachment 1-K, Verification Of Automatic Actions.
- CIB has just occurred.

If all equipment functions as designed, which one of the following describes the status of River Water System Pumps?

- A. No pumps running.
- B. One pump running.
- C. Two pumps running.
- D. Two pumps running with two Auxiliary River Water System pumps running.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 089

With the Unit in Mode 1 and all systems in NSA, a loss of cooling water to the station air compressors will directly result in which one of the following?

- A. Low cooling water pressure trip at less than 85 psig.
- B. Low oil temperature trip at less than 175°F.
- C. High outlet air temperature trip at greater than 425°F.
- D. High oil pressure trip at greater than 20 psig.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 090

Given the following conditions:

- The Unit is in Mode 3. All systems are in NSA.
- The following annunciator is received in the Control Room:
 - [A3-73], REACT COOL PP THERMAL BARRIER COOL WATER DISCH FLOW HIGH
- [TV-1CC-107A], RCP Thermal Barrier CCR Outlet Isolation Valve is closed.

Which one of the following describes the effect of this failure on the operation of "1A" RCP?

- A. "1A" RCP must be tripped immediately.
- B. TV-1CC-107A must be opened within 5 minutes or "1A" RCP must be tripped.
- C. "1A" RCP must be tripped within 5 minutes regardless of TV-1CC-107A position.
- D. "1A" RCP must be tripped only if seal injection is also lost for greater than 5 minutes.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 091

Given the following:

- The reactor has failed to trip automatically when required and can NOT be manually tripped.
- The main turbine is tripped.
- All AFW pumps are running.
- Emergency boration is in progress.
- PRZR pressure is 2335 psig.
- The PRZR PORV's do NOT automatically open.
- The operators manually open one PRZR PORV and reduce RCS pressure to 2135 psig.

Which one of the following is the reason for reducing RCS pressure at this point in the transient?

- A. To prevent the rapid RCS overpressurization transient expected with most ATWS events.
- B. To minimize primary-to-secondary leakage until further recovery actions can be taken, in the case of the most limiting ATWS event, a SGTR.
- C. To allow enough borated flow into the RCS to ensure the addition of negative reactivity to the core.
- D. To add negative reactivity from the RCS pressure coefficient of reactivity as the RCS is depressurized.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 092

An alarm is received in the Control Room. The instrument that feeds the alarm also feeds a system control action.

The operating crew believes that a false indication has caused the alarm.

Per 1/2OM-48.1.D, Operations Shift Rules Of Practice, which one of the following describes the required response to the indication?

- A. Do not believe the alarm indication. If the control action is in the conservative direction, no action is necessary. If the control action may result in a plant trip, take manual control of the system.
- B. Believe the alarm indication. If the control action is in the conservative direction, no action is necessary unless the instrument or alarm is determined to be false by at least two independent crew members.
- C. Do not believe the alarm indication. Place the affected controller in manual and determine which failure has occurred in accordance with the Alarm Response Procedure.
- D. Believe the alarm indication. If the control action is in a conservative direction, no action is necessary unless two redundant instruments monitoring the same parameter determine that the control action is being caused by a failed instrument.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 093

A Unit startup is in progress per 1OM-52.4.A, Raising Power From 5% To Full Load Operation when a loss of instrument air occurs. The operators are performing AOP-1.34.1, Loss Of Station Instrument Air when the main feedwater regulating valves close and a reactor trip occurs.

Which one of the following describes the procedure transitions for this event?

- A. 1OM-52.4.A usage is suspended. AOP-1.34.1 is completed followed by entry to E-0, Reactor Trip Or Safety Injection.
- B. 1OM-52.4.A usage is suspended. AOP-1.34.1 is performed until a RED or ORANGE path condition requires entry to a functional recovery procedure.
- C. E-0, Reactor Trip Or Safety Injection is entered and exited when directed to another specific procedure. AOP-1.34.1 may be performed to aid in plant recovery.
- D. ES-0.1, Reactor Trip Response is entered and exited when directed to procedure and step in effect. AOP-1.34.1 may be performed to aid in plant recovery.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 094

Per 1/2OM-48.2.C, Adherence And Familiarization To Operating Procedures, when responding to multiple annunciators in the Control Room, which one of the following lists the alarm groups in order of highest to lowest priority?

- A. First Out, RPS/ESF Signals, Radiation Monitors, Vital Busses
- B. RPS/ESF Signals, Radiation Monitors, Vital Busses, First Out
- C. Vital Busses, First Out, RPS/ESF Signals, Radiation Monitors
- D. First Out, Vital Busses, RPS/ESF Signals, Radiation Monitors

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 095

Given the following conditions:

- A Reactor Trip has occurred due to a loss of offsite power.
- The operating crew is performing actions of ES-0.2, Natural Circulation Cooldown.
- RVLIS is NOT available.
- The crew has commenced RCS depressurization to 1950 psig.
- RCS pressure is 2080 psig and trending DOWN.
- RCS Tavg is 548°F and STABLE.
- Pressurizer Level is 5% and trending DOWN.

Which one of the following actions will be required?

- A. Continue depressurization to 1950 psig and block Safety Injection.
- B. Initiate Safety Injection and go to E-0, Reactor Trip Or Safety Injection.
- C. Stop the cooldown, Block SI, and initiate depressurization to 1950 psig.
- D. Stop the depressurization and go to ES-0.4, Natural Circulation With Steam Void In Vessel (Without RVLIS).

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 096

Given the following conditions:

- The reactor has tripped due to a loss of offsite power.
- The operating crew has transitioned to ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS) due to steam void formation in the reactor vessel.

While performing this procedure, which one of the following conditions requires the crew to stop the cooldown and raise RCS pressure?

- A. Pressurizer level rises to 90%.
- B. RVLIS Dynamic Range indication drops below 100%.
- C. RCS cooldown cannot be maintained less than 25°F/Hr.
- D. RVLIS Full Range indication drops below 77%.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 097

The Unit was at 100% power when the following occurs:

- Reactor Trip, all rods fully inserted.
- Loop 1 SG pressure is 400 psig and continuing to lower rapidly.
- Loop 2 and 3 SG pressures are stable at 800 psig.
- Containment pressure is 12 psig and rising.

Which one of the following describes the valves that are needed to operate to terminate steam flow?

- A. [TV-1MS-101A], Main Steam Isolation Valve or [NRV-1MS-101A], Non-Return Valve.
- B. [TV-1MS-101A], Main Steam Isolation Valve or [NRV-1MS-101B and C], Non-Return Valves.
- C. [TV-1MS-101B and C], Main Steam Isolation Valves or [NRV-1MS-101A], Non-Return Valve
- D. [TV-1MS-101B and C], Main Steam Isolation Valves or [NRV-1MS-101B and C], Non-Return Valves

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 098

Following a Small Break LOCA, the operating crew is performing actions of FR-P.1, Response To Imminent Pressurized Thermal Shock.

Which one of the following describes the difference in SI termination criteria for FR-P.1 as opposed to the criteria in ES-1.1, Safety Injection Termination?

The criterion in FR-P.1 is...

- A. less restrictive to allow for a faster reduction in RCS pressure.
- B. more restrictive to allow for a more controlled reduction in RCS pressure.
- C. less restrictive because subsequent RCP restart is likely to cause propagation of any existing flaw in the reactor vessel walls.
- D. more restrictive because subsequent RCP restart is likely to result in an increased RCS inventory loss.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 099

The Unit was operating at 100% power when a Small Break LOCA in containment resulted in a Reactor Trip and Safety Injection actuation.

Which one of the following describes the **SEQUENCE** of automatic actions as Containment pressure increases, peaking at 11 psig?

- A. CIB initiated; main steamlines isolated; Recirc Spray pumps started.
- B. CIB initiated; Recirc Spray pumps started; main steamlines isolated.
- C. Main steamlines isolated; CIB initiated; Recirc Spray pumps started.
- D. Main steamlines isolated; Recirc Spray pumps started; CIB initiated.

BVPS-1LOT5 NRC EXAM
Reactor Operator

Question 100

Given the following conditions:

A LOCA has occurred. Due to ECCS failures, the operating crew is performing the actions of FR-C.2, Response To Degraded Core Cooling.

The crew is depressurizing SGs to facilitate SI accumulator injection.

Which one of the following Critical Safety Functions could potentially exhibit a **RED** condition based upon the actions taken in FR-C.2?

- A. Subcriticality
- B. Core Cooling
- C. Heat Sink
- D. Integrity



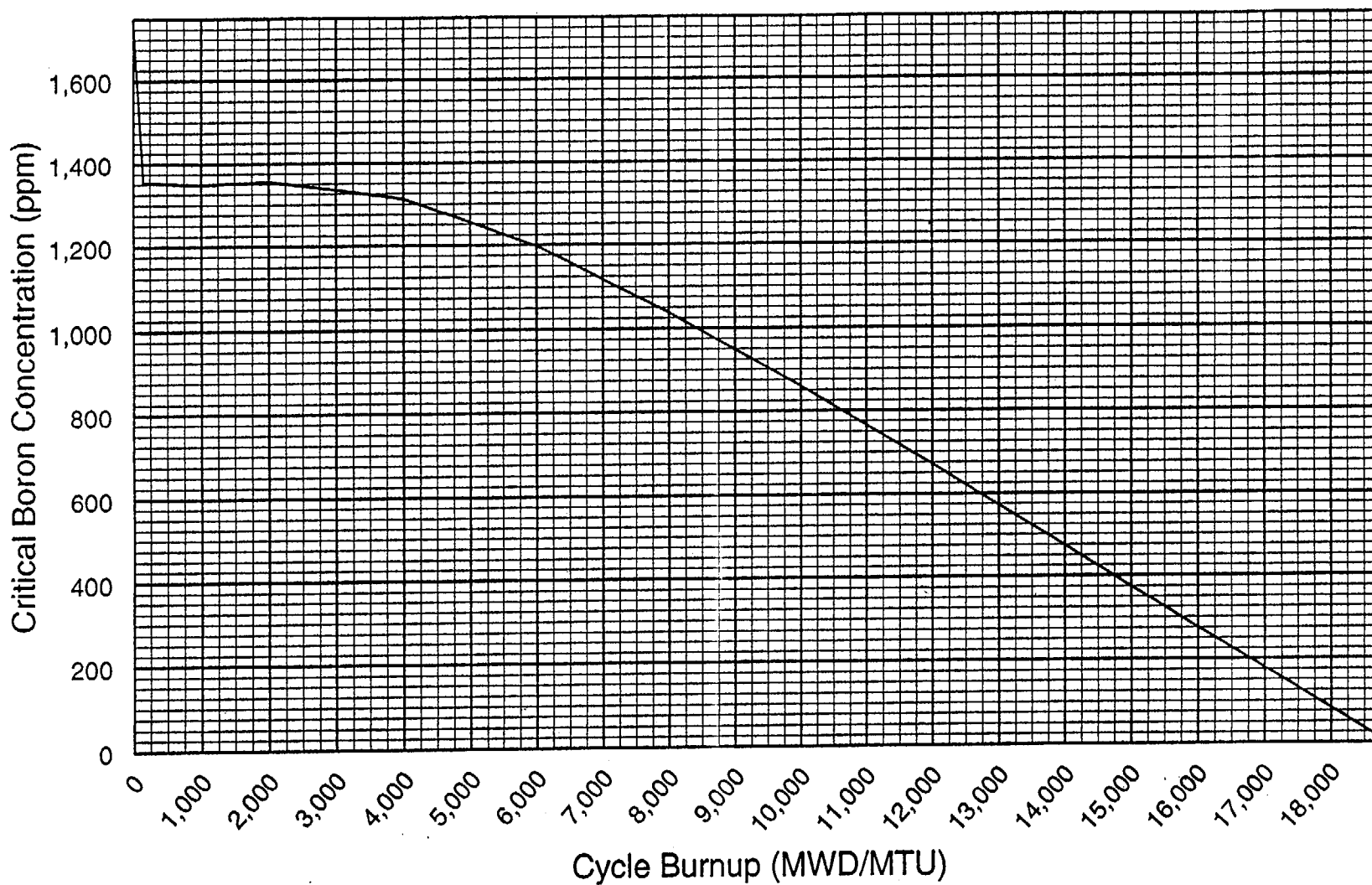
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O.M. FIGURE 13

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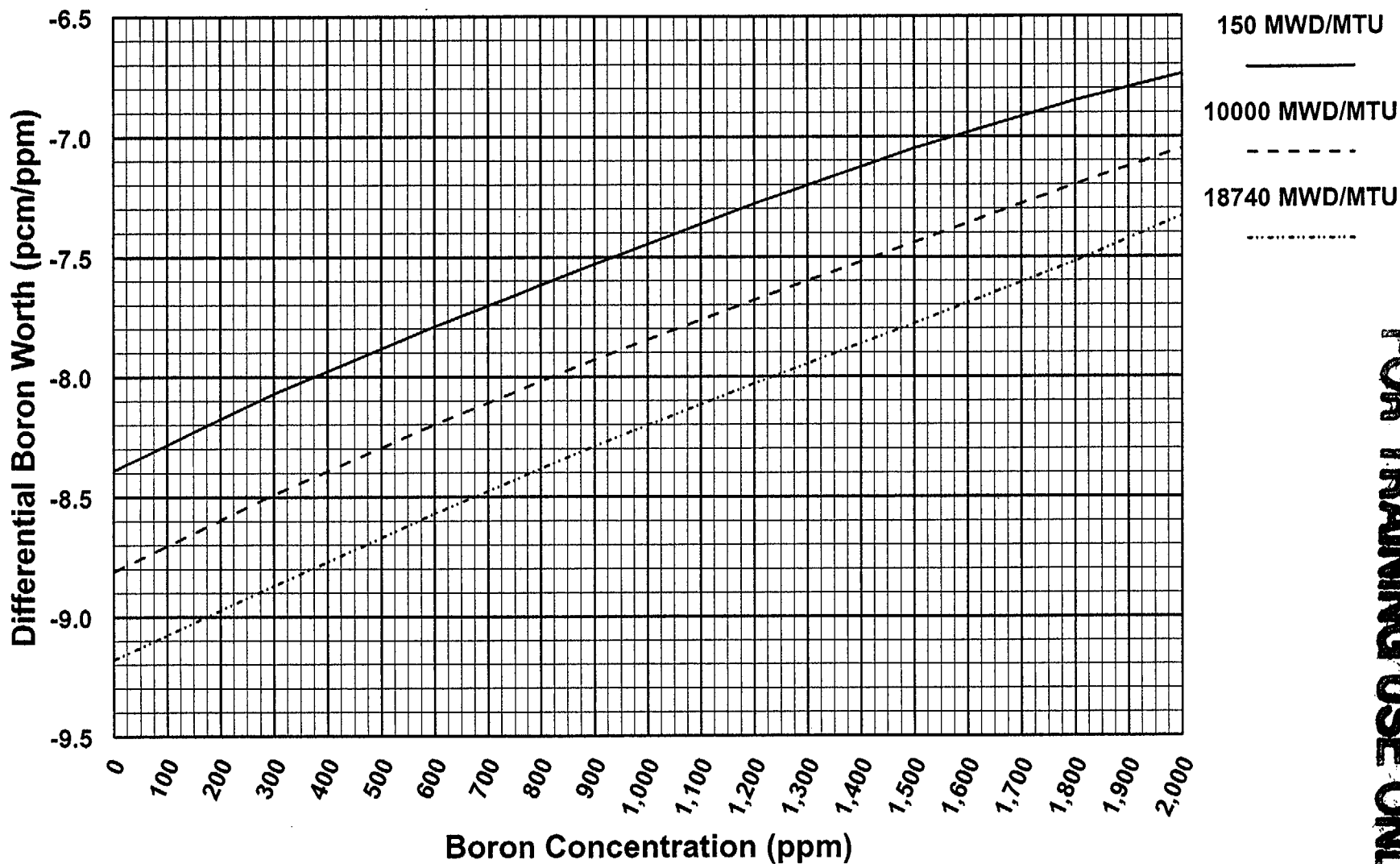
Critical Boron Concentration vs Burnup HFP, ARO, Equilibrium Xenon Unit 1, Cycle 15



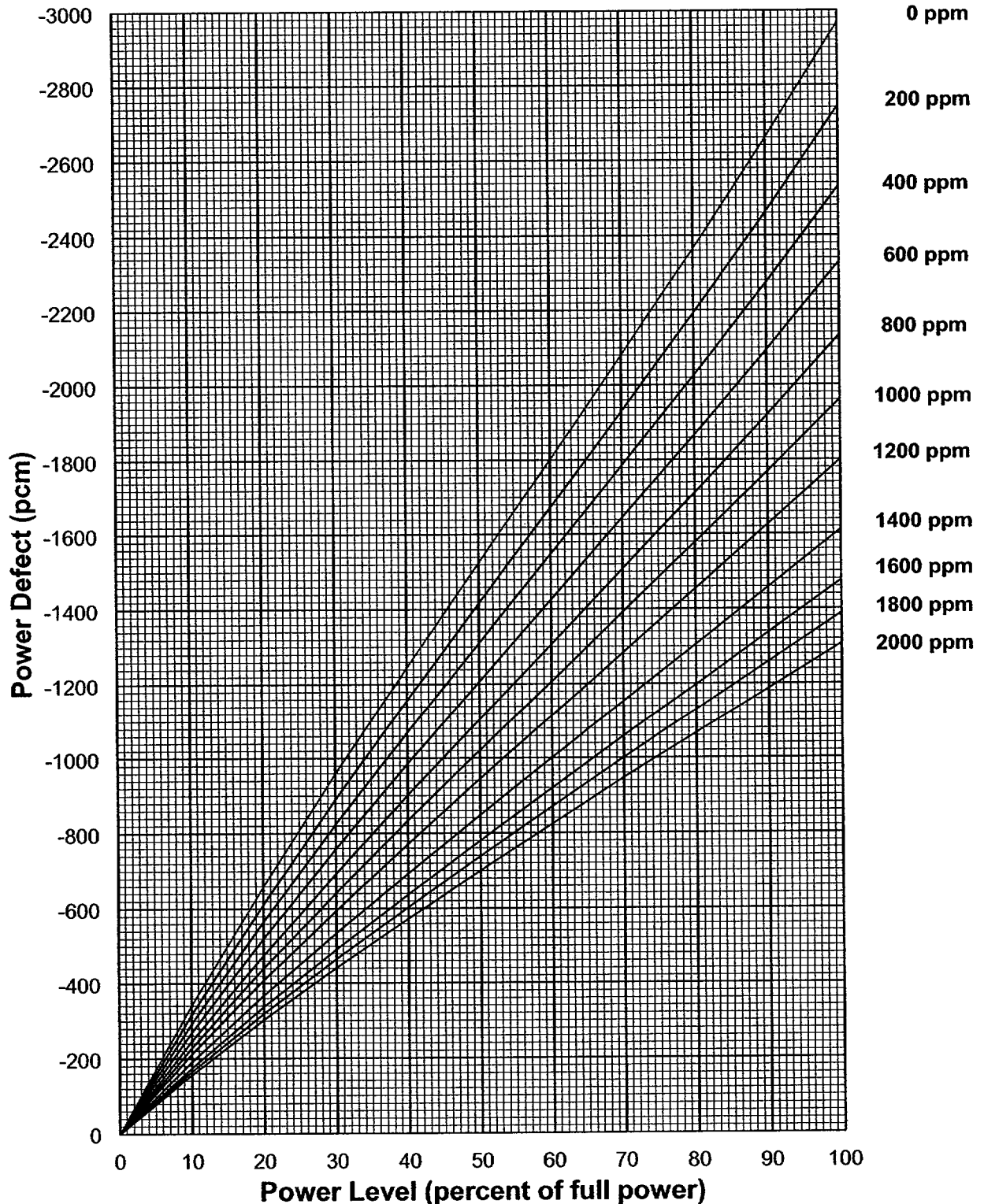
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HZP Differential Boron Worth vs Boron Concentration Unit 1, Cycle 15

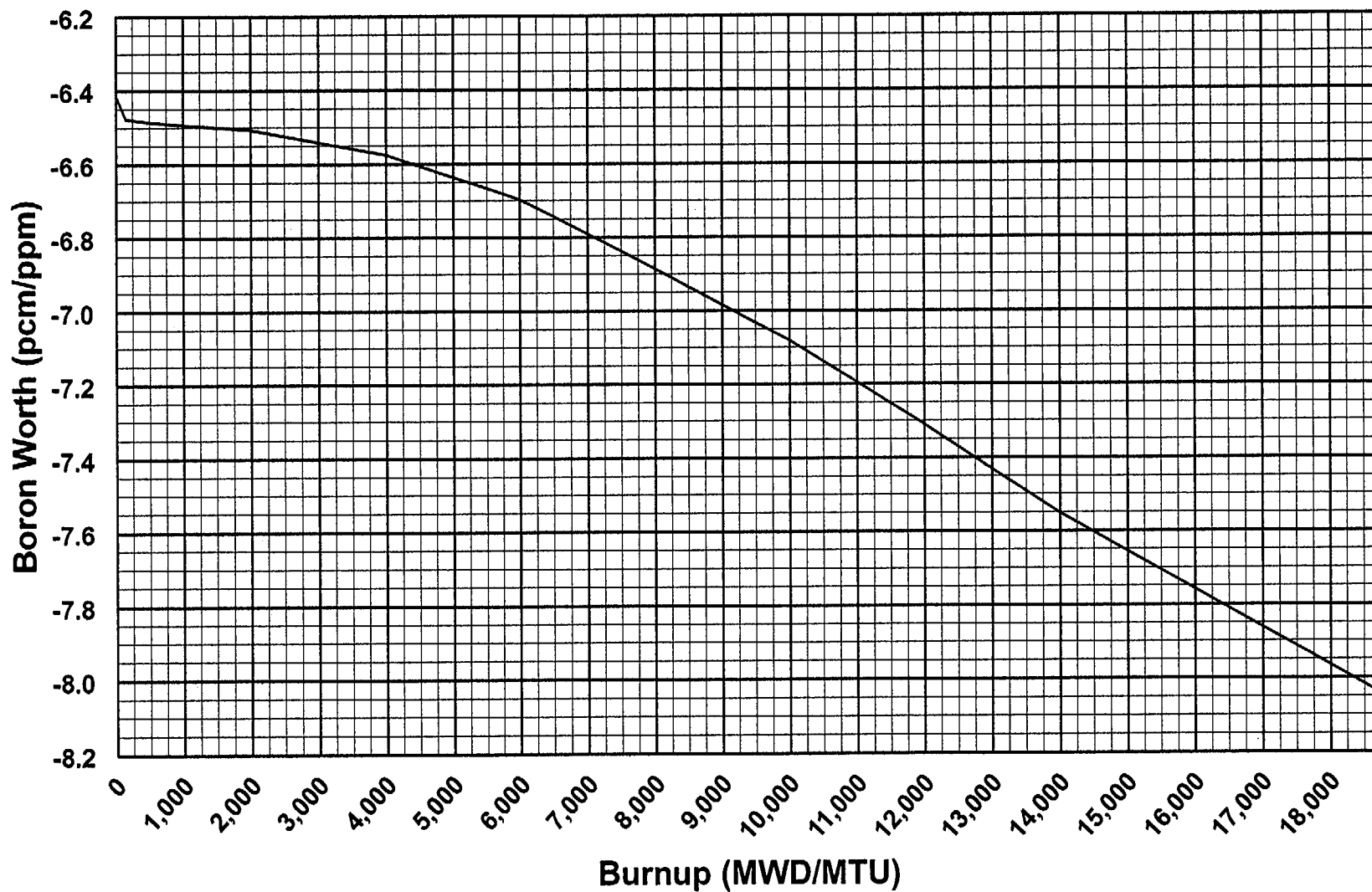


POWER DEFECT vs PERCENT POWER
at BOL, MOL, and EOL
Unit 1, Cycle 15



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Boron Worth vs Burnup ARO, HFP, Critical Boron Unit 1, Cycle 15



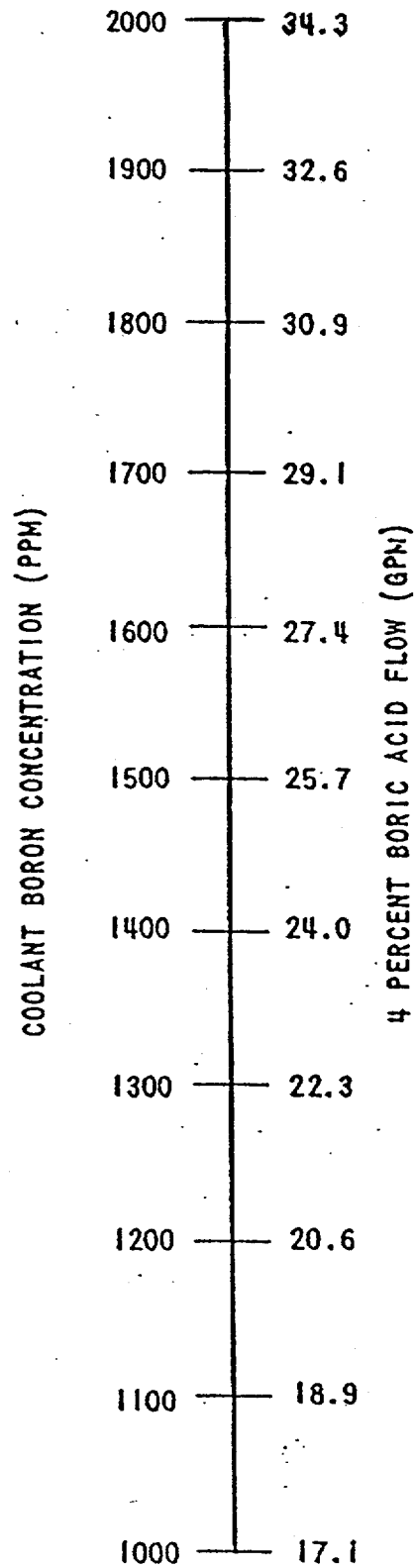
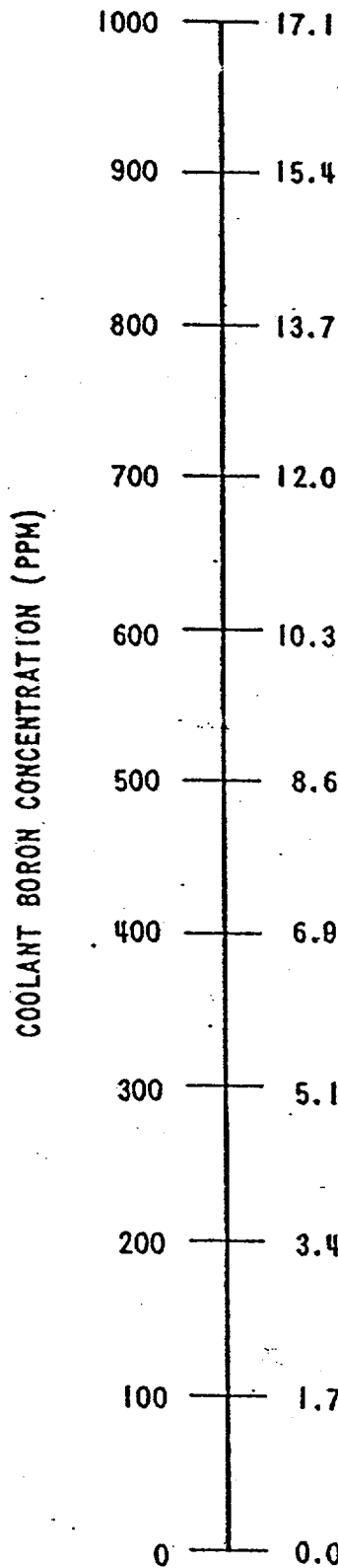
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Issue 15 Rev 1

CURVE BOOK - BVPS I

CB-30

Record Type #9A.345D



BLENDED FLOW BASED ON 120 GPM AUTO MAKEUP

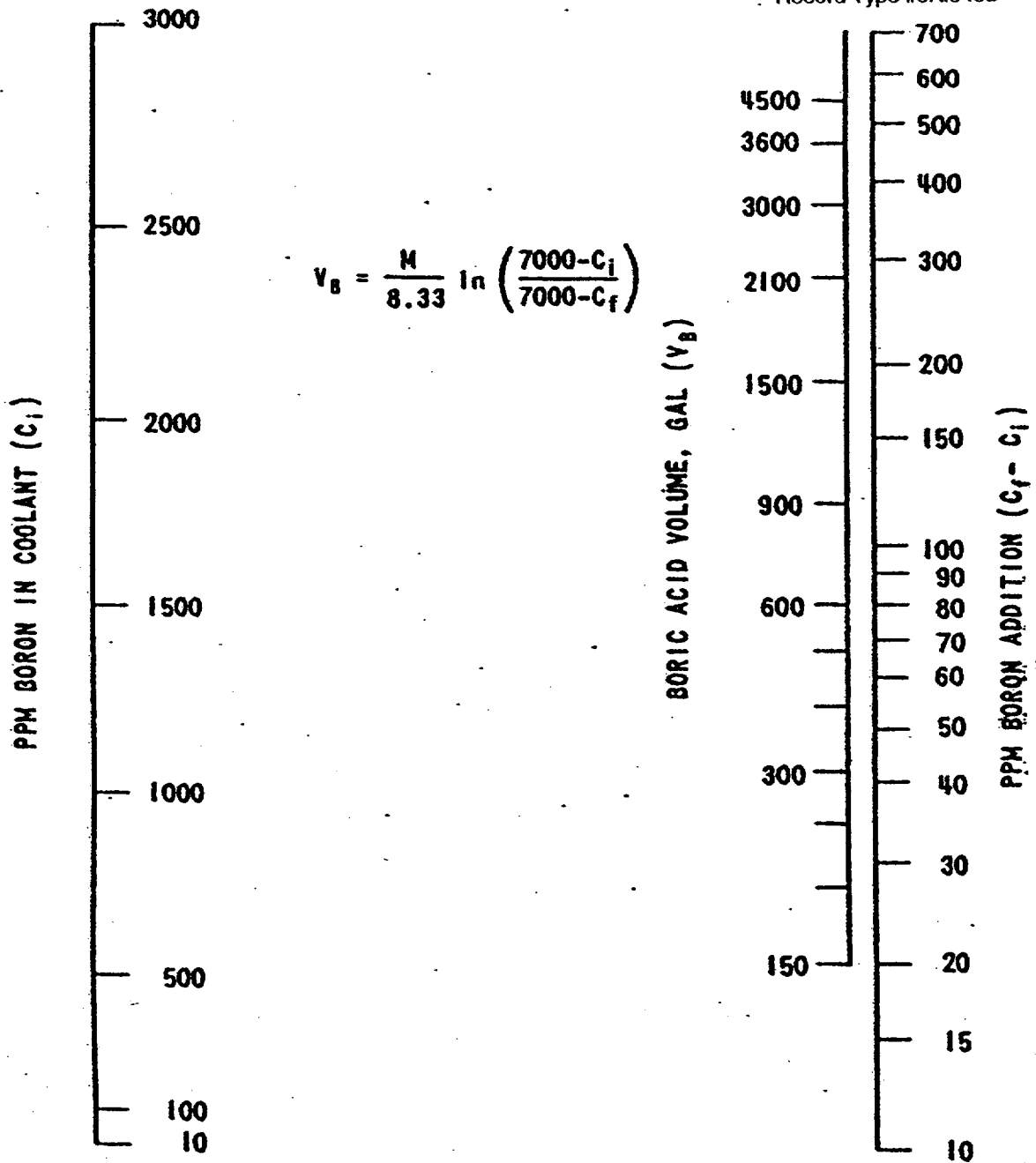
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CB-31

Record Type #9A.345D



BORON ADDITION

(refer to figure CB-36 for correction factors)
 (refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

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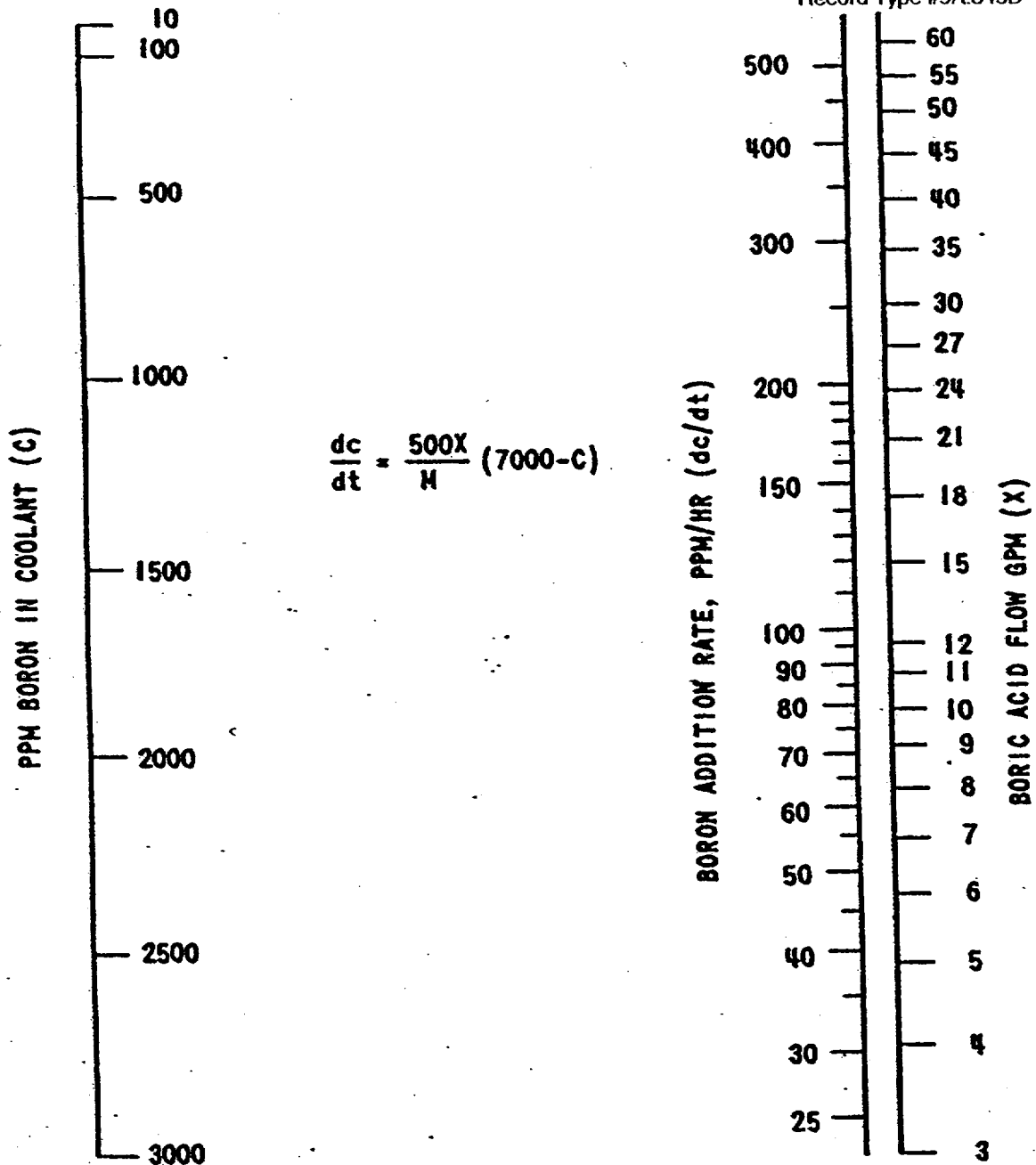
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ISSUE 15 REV 2

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CB-32

Record Type #9A.345D



BORON ADDITION RATE

(refer to figure CB-36 for correction factors)

(refer to 1OM-6.5.B.6, Table 6-6, "RCS Volume")

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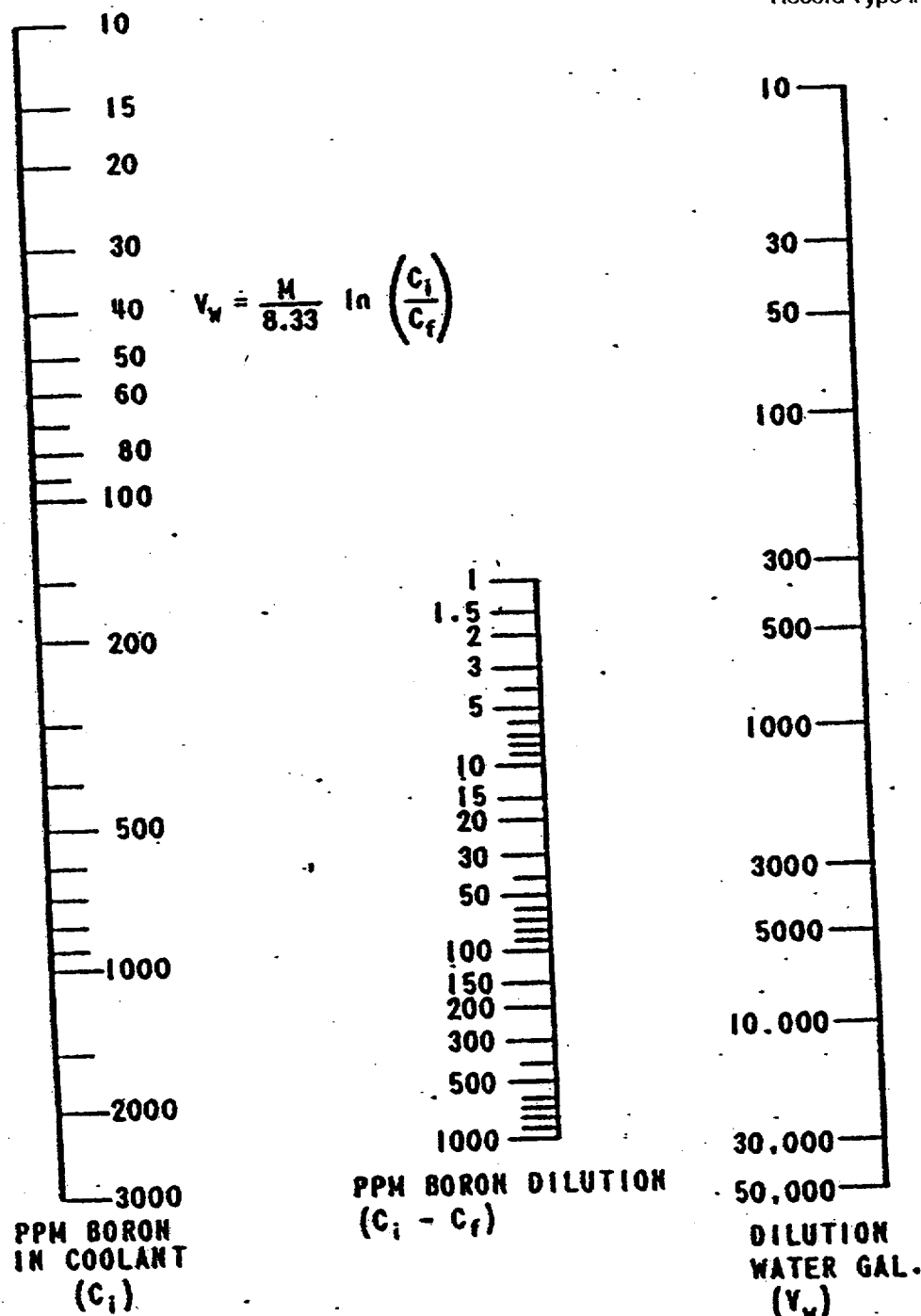
CONTROLLED
BVPS UNIT 1

ISSUE 15 REV 2

CURVE BOOK - BVPS I

CB-33

Record Type #9A.345D



BORON DILUTION

(refer to figure CB-36 for correction factors)
 (refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

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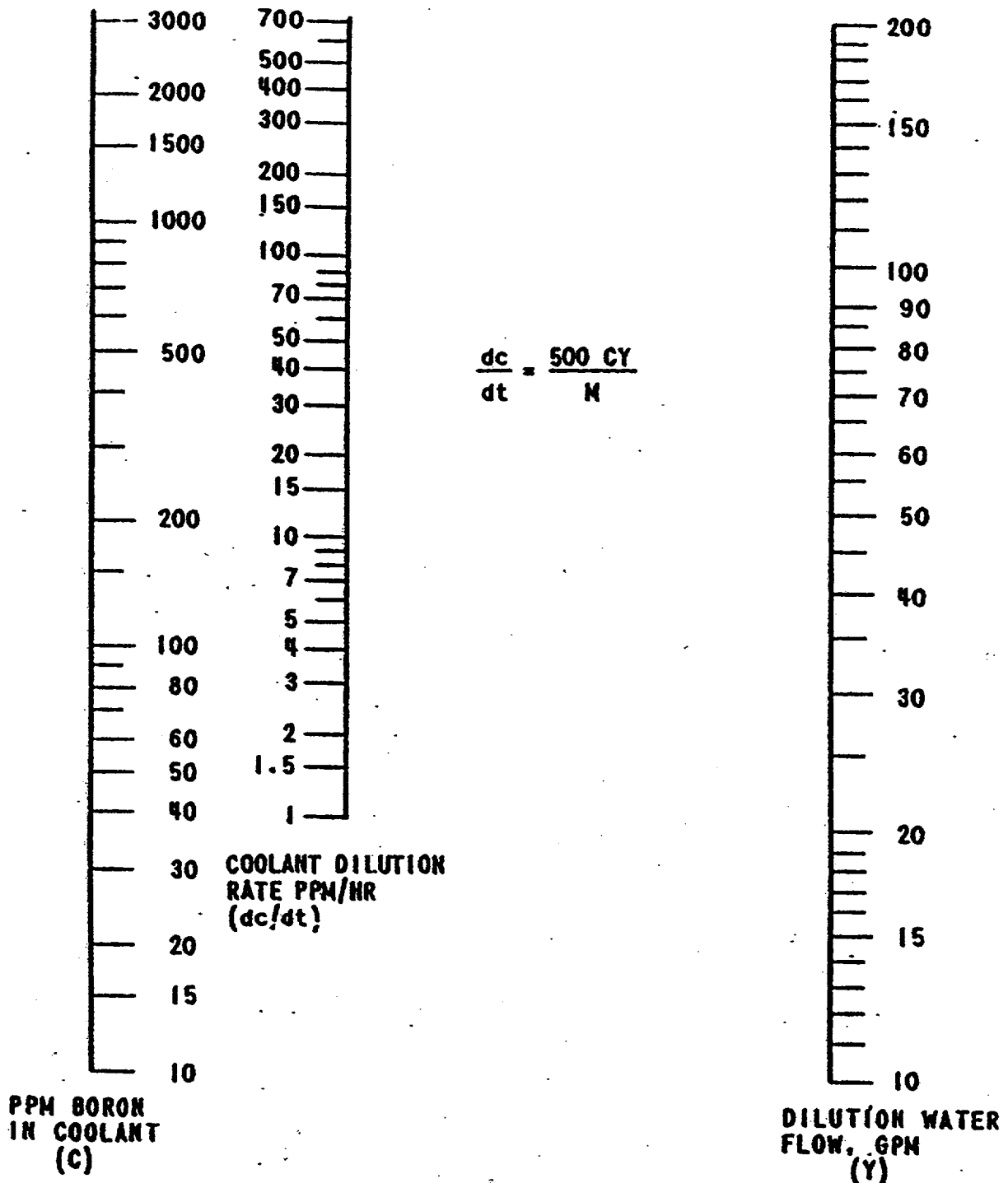
CONTROLLED
 BVPS UNIT 1

ISSUE 15 REV 2

CURVE BOOK – BVPS I

CB-34

Record Type #9A.345D



BORON DILUTION RATE

(refer to figure CB-36 for correction factors)

(refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

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CURVE BOOK – BVPS I

CB-36

Record Type #9A.345D

NOMOGRAPH CORRECTION FACTORS

Plant Conditions			Correction Factor (K) (See Note)
Pressure (psig)	T (AVG) (°F)	Pressurizer Level	
2235	547-570	Normal Operating	1.00
1600	500	No-Load	1.05
1200	450	No-Load	1.10
800	400	No-Load	1.16
400	350	No-Load	1.18
400	300	No-Load	1.20
400	300	Solid Water	1.35
400	200	No-Load	1.28
400	200	Solid Water	1.40
400	100	Solid Water	1.47

NOTE: CORRECTION FACTORS ARE APPLIED AS FOLLOWS:

- (a) Boron Addition and Dilution Total Volume Nomographs

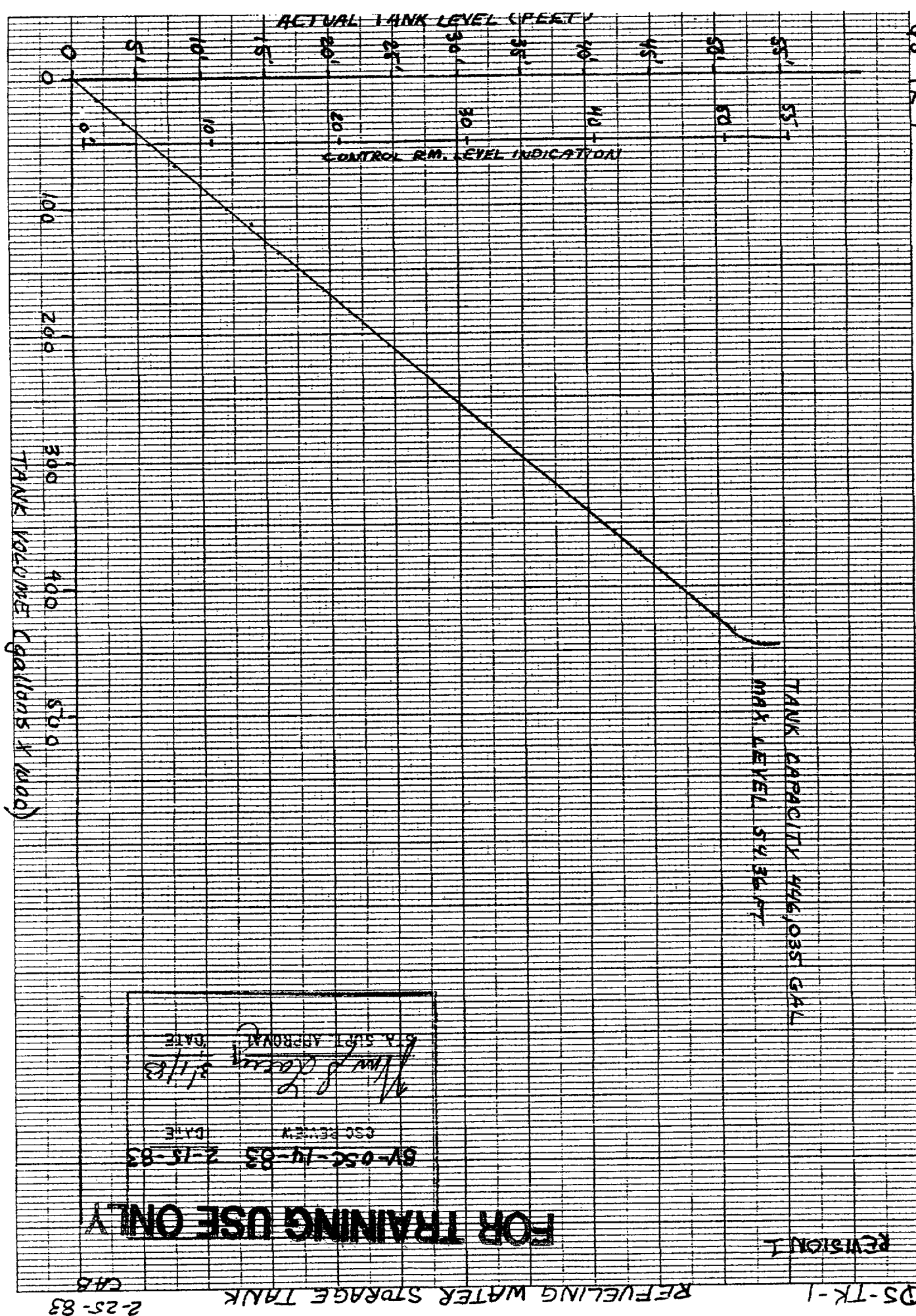
$$V(\text{Corrected}) = K \times V(\text{Nomograph})$$

- (b) Boron Addition and Dilution Rate Nomographs

$$\frac{dc}{dt}(\text{Corrected}) = \frac{1}{K} \times \frac{dc}{dt}(\text{Nomograph})$$

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05-TK-1



REVISION 1

05-TK-1

REFUELING WATER STORAGE TANK

2-25-83

FOR TRAINING USE ONLY

6V-05C-14-83 2-15-83
OSC REVIEW DATE
S.A. SIFT APPROVAL
DATE 2/15/83

SYMPTOMATIC RESPONSE/UNEXPECTED CONDITIONS

E-3 (Issue 1C, Revision 2)

1. SI REINITIATION CRITERIA

Manually operate SI pumps and align valves as necessary and GO TO ECA-3.1, "SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired", Step 1, if EITHER condition listed below occurs:

- On ICCM RCS subcooling based on core exit TCs - LESS THAN 46F [54F FOR ADVERSE CNMT] (If less, refer to Attachment 6-A)
- PRZR level - CANNOT BE MAINTAINED GREATER THAN 18% [37% FOR ADVERSE CNMT]

2. SECONDARY INTEGRITY CRITERIA

GO TO E-2, "Faulted Steam Generator Isolation", Step 1, if any SG pressure is dropping in an uncontrolled manner or has completely depressurized, and has not been isolated unless needed for RCS cooldown.

3. COLD LEG RECIRCULATION SWITCHOVER CRITERION

GO TO ES-1.3, "Transfer Cold Leg Recirculation", Step 1, if RWST level reduces to less than 19 FEET.

4. AFW SUPPLY SWITCHOVER CRITERION

Monitor PPDWST [WT-TK-10] for AFW pumps supply. Upon reaching low level alarm, 27.5 FEET, refer to Attachment 2-H for makeup.

5. MULTIPLE TUBE RUPTURE CRITERIA

RETURN TO E-3, "Steam Generator Tube Rupture", Step 1, if any intact SG level rises in an uncontrolled manner or any intact SG has abnormal radiation.

6. ADVERSE CONTAINMENT CRITERIA

- CNMT pressure - GREATER THAN 5.0 PSIG
-OR-
- CNMT radiation on [RM-1RM-219A(B)] - GREATER THAN 1E+5 R/HR
-OR-
- Integrated CNMT radiation - GREATER THAN 1E+6 R

FOR TRAINING USE ONLY

Number E-3	Title Steam Generator Tube Rupture	Issue 1C Revision 2
---------------	--	------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

CAUTION

RCS and ruptured SGs pressures must be maintained less than the ruptured SGs atmospheric steam dump setpoint to prevent offsite releases.

NOTE

When letdown is in service, charging flow should be maintained greater than 30 GPM to ensure adequate letdown cooling and prevent letdown from flashing to steam.

31 Control RCS Pressure And Charging Flow To Minimize RCS-To-Secondary Leakage

- a. Perform appropriate actions from table:

		RUPTURED SG NR LEVEL		
		ISING	DROPPING	OFFSCALE HIGH
P R Z R L E V E L	LESS THAN 32% [50% ADVERSE CNMT]	<ul style="list-style-type: none"> • Raise charging flow • Depressurize RCS using Step 31.b 	Raise charging flow	<ul style="list-style-type: none"> • Raise charging flow • Maintain RCS & ruptured SGs pressures equal
	BETWEEN 32% [50% ADVERSE CNMT] AND 50%	Depressurize RCS using Step 31.b	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal
	BETWEEN 50% AND 75% [61% ADVERSE CNMT]	<ul style="list-style-type: none"> • Depressurize RCS using Step 31.b • Lower charging flow 	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal
	GREATER THAN 75% [61% ADVERSE CNMT]	Lower charging flow	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal

(step continued next page)

INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

- a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.
- b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.
- c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.

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TABLE 3.3-6

DPR-66

RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>SETPOINT</u> ⁽³⁾	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. AREA MONITORS					
a. Deleted					
b. Containment					
i. Purge & Exhaust Isolation (RMVS 104 A & B)	2	(2)	$\leq 1.6 \times 10^3$ cpm	$10 - 10^6$ cpm	22
ii. Area (RM-RM-219 A & B)	2	1,2,3 & 4	$\leq 1.5 \times 10^4$ R/hr	$1 - 10^7$ R/hr	35
c. Control Room Isolation (RM-RM-218 A & B)	2	1,2,3,4 and (4)	$\leq .47$ mR/hr	$10^{-2} - 10^3$ mR/hr	41
2. PROCESS MONITORS					
a. Containment					
i. Gaseous Activity RCS Leakage Detection (RM 215B)	1	1,2,3 & 4	N/A	$10 - 10^6$ cpm	20
ii. Particulate Activity RCS Leakage Detection (RM 215A)	1	1,2,3 & 4	N/A	$10 - 10^6$ cpm	20
b. Deleted					

TABLE 3.3-6 (Continued)TABLE NOTATIONS

- (1) (Not used)
- (2) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.
- (3) Above background.
- (4) During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies.

ACTION STATEMENTS

- ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 21 - This Action is not used.
- ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.
- ACTION 35 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable Channel(s) to OPERABLE status within 72 hours, or:
- a) Initiate the preplanned alternate method of monitoring the appropriate parameter(s), and
 - b) Return the channel to OPERABLE status within 30 days, or, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.
- ACTION 41 - a) With the number of Unit 1 OPERABLE channels one less than the Minimum Channels OPERABLE requirement:
- 1. Verify the respective Unit 2 control room radiation monitor train is OPERABLE within 1 hour and at least once per 31 days.

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TABLE 3.3-6 (Continued)

ACTION STATEMENTS

ACTION 41 (Continued)

2. With the respective Unit 2 control room radiation monitor train inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the Unit 1 control room radiation monitor to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.
- b) With no Unit 1 control room radiation monitors OPERABLE:
 1. Verify both Unit 2 control room radiation monitors are OPERABLE within 1 hour and at least once per 31 days.
 2. With either Unit 2 control room radiation monitor inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the respective Unit 1 control room radiation monitor train to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.
 3. With no Unit 2 control room radiation monitors OPERABLE, immediately isolate the combined control room by closing all series air intake and exhaust isolation dampers and be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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**U. S. Nuclear Regulatory Commission
Site-Specific
Written Examination**

Applicant Information

Name:

Region: I

Date:

Facility/Unit: BVPS-1

License Level: **SRO**

Reactor Type: Westinghouse PWR

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected six hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

Applicant's Signature

Results

Examination Value

100 Points

Applicant's Score

_____ Points

Applicant's Grade

_____ Percent

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11. A B C D
12. A B C D
13. A B C D
14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D
20. A B C D
21. A B C D
22. A B C D
23. A B C D
24. A B C D
25. A B C D

26. A B C D
27. A B C D
28. A B C D
29. A B C D
30. A B C D
31. A B C D
32. A B C D
33. A B C D
34. A B C D
35. A B C D
36. A B C D
37. A B C D
38. A B C D
39. A B C D
40. A B C D
41. A B C D
42. A B C D
43. A B C D
44. A B C D
45. A B C D
46. A B C D
47. A B C D
48. A B C D
49. A B C D
50. A B C D

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

51.	A	B	C	D	76.	A	B	C	D
52.	A	B	C	D	77.	A	B	C	D
53.	A	B	C	D	78.	A	B	C	D
54.	A	B	C	D	79.	A	B	C	D
55.	A	B	C	D	80.	A	B	C	D
56.	A	B	C	D	81.	A	B	C	D
57.	A	B	C	D	82.	A	B	C	D
58.	A	B	C	D	83.	A	B	C	D
59.	A	B	C	D	84.	A	B	C	D
60.	A	B	C	D	85.	A	B	C	D
61.	A	B	C	D	86.	A	B	C	D
62.	A	B	C	D	87.	A	B	C	D
63.	A	B	C	D	88.	A	B	C	D
64.	A	B	C	D	89.	A	B	C	D
65.	A	B	C	D	90.	A	B	C	D
66.	A	B	C	D	91.	A	B	C	D
67.	A	B	C	D	92.	A	B	C	D
68.	A	B	C	D	93.	A	B	C	D
69.	A	B	C	D	94.	A	B	C	D
70.	A	B	C	D	95.	A	B	C	D
71.	A	B	C	D	96.	A	B	C	D
72.	A	B	C	D	97.	A	B	C	D
73.	A	B	C	D	98.	A	B	C	D
74.	A	B	C	D	99.	A	B	C	D
75.	A	B	C	D	100.	A	B	C	D

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 001

Given the following conditions:

- The Unit is at 85% power. All systems are in NSA.
- A Control Bank "D", Group 2 rod drops to the bottom of the core.
- The plant is stabilized, the cause of the failure identified and repaired.

Which one of the following describes the method for retrieving the dropped rod in accordance with 10M-1.4.X, RCCA or RCCA Group Misalignment?

- A. All rods in group 2 except the affected rod are disconnected. Control Bank "D", Group 1 rods remain connected. The Group 2 Step Counter is set to the dropped rod position prior to retrieval. The affected rod is withdrawn until the Group 2 Step Counter matches the Group 1 Step Counter.
- B. All rods in Control Bank "D", Group 1 and Group 2, except the affected rod are disconnected. The Step Counter for Group 2 is set to the dropped rod position. The Step Counter for Group 1 is left at its current position. The affected rod is withdrawn until Group 1 and Group 2 Demand are equal.
- C. All rods in Control Bank "D", Group 1 and Group 2, except the affected rod are disconnected. The Step Counters for Group 1 and Group 2 are set to the dropped rod position. The affected rod is withdrawn until the Step Counters match the initial bank position.
- D. All rods in group 2 except the affected rod are disconnected. Control Bank "D", Group 1 rods remain connected. The Step Counters for Group 1 and Group 2 are set to the dropped rod position. The affected rod is withdrawn until the Step Counters match the initial bank position.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 002

The plant is operating at 100% power, NSA when the following indications are observed.

- Control Bank "D" rod F-6 position indicates '0' steps.
- Rod bottom rod drop alarm is received.

If rod F-6 is the only rod bottom light lit and the plant remains on-line, which one of the following describes the **INITIAL** automatic response of the CVCS?

- A. Letdown flow is increased.
- B. Letdown flow is decreased.
- C. Charging flow is increased.
- D. Charging flow is decreased.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 003

Given the following conditions:

- The plant is in Mode 3.
- A reactor startup is in progress.
- Shutdown Bank "A" is fully withdrawn.
- Shutdown Bank "B" is being withdrawn.
- The following annunciator is received in the Control Room:
 - [A3-82], REACTOR COOL PP BRG OIL RESERVOIR LOW
- The startup is stopped while a Containment entry is made to investigate.

The operator in containment reports a large oil leak in the vicinity of "1A" RCP.

Which one of the following describes the action required?

- A. Trip "1A" RCP and refer to the alarm response procedure for "1A" RCP low flow.
- B. Trip the reactor, trip "1A" RCP and refer to the alarm response procedure for "1A" RCP low flow.
- C. Trip the reactor, perform Immediate Manual Actions of E-0, Reactor Trip Or Safety Injection, trip "1A" RCP and continue in E-0.
- D. Monitor "1A" RCP bearing temperatures. If any bearing temperature exceeds 275°F, trip the RCP and refer to the alarm response procedure for RCP bearing high temperature.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 004

The following conditions exist for starting a Reactor Coolant Pump (RCP):

- Local Lift Oil Pump control switch in 'AUTO'.
- RCP control switch placed in 'START' and released.

Which one of the following describes the sequence of events that will take place to start the RCP?

- A. Lift Oil Pump starts. After 50 seconds, RCP starts. 2 minutes later the Lift Oil Pump stops.
- B. Lift Oil Pump starts. After 2 minutes, RCP starts. 50 seconds later the Lift Oil Pump stops.
- C. After 50 seconds the Lift Oil Pump starts. 2 minutes later the RCP starts. 50 seconds, the Lift Oil Pump stops.
- D. After 50 seconds the Lift Oil Pump starts. After 50 seconds the RCP starts. 2 minutes later the Lift Oil Pump stops.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 005

The Unit is operating at 100% power NSA, when [LT-1CH-112], VCT Level Transmitter fails high.

After an extended period of operation, the following conditions result.

- [A3-53], VOLUME CONTROL TANK LEVEL HIGH-LOW alarms.
- VCT level indicates approximately 5%.

Assuming **NO** action by the crew, which one of the following describes the plant response?

- A. Charging pump suction from the VCT remain open; the RWST suction valves remain closed.
- B. Charging pump suction from the VCT will close; the RWST suction valves remain closed.
- C. Charging pump suction from the VCT remain open; the RWST suction valves also open on low VCT level.
- D. Charging pump suction from the VCT will close; the RWST suction valves open on low VCT level.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 006

The operating crew is performing a dilution in preparation for rod withdrawal to criticality.

If K_{eff} is approximately .99 when the dilution is started, at what point in the dilution can the crew determine that K_{eff} is approximately .995?

- A. When the Source Range counts double from their initial value.
- B. When there is a stable startup rate with no change in the dilution flow rate.
- C. When Control Bank "A" control rods are withdrawn from the core.
- D. When the Source Range counts double 2 - 3 times from their initial value.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 007

Given the following conditions:

- An ATWS has occurred.
- The operating crew is performing the actions of FR-S.1, Response To Nuclear Power Generation/ATWS.
- All SG narrow range levels are offscale LOW.

Which one of the following describes the required operation of the AFW System and why?

- A. Operate all available AFW pumps to establish total flow of 355 gpm; to maintain minimum heat sink and restore SG levels.
- B. Operate motor driven AFW pumps only to establish total flow of 355 gpm; to minimize effects of RCS cooldown on reactivity.
- C. Operate all available AFW pumps to establish total flow of 630 gpm; to maintain minimum heat sink and restore SG levels.
- D. Operate motor driven AFW pumps only to establish total flow of 630 gpm; to minimize effects of RCS cooldown on reactivity.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 008

Given the following conditions:

- The Unit was operating at 100% power.
- A PORV failed open.
- The reactor has tripped on low Pressurizer pressure.
- Pressurizer pressure stabilizes at 1700 psig.

Plant status is as follows:

- All control rods are fully inserted.
- Status light "S Inj Act Sig" NOT LIT at Panel 62, C-4.
- Normally running charging pump is in service.
- Standby charging pump NOT running,
- NO LHSI pumps running.
- CIA NOT actuated.
- CIB NOT actuated.
- Main steam lines NOT isolated.
- Feedwater Isolation Signal NOT actuated.

Which one of the following describes the required manual operator actions?

Manually initiate both trains of ...

- A. Safety Injection.
- B. Safety Injection and CIB.
- C. Safety Injection, CIB, and Main Steam Line Isolation.
- D. Safety Injection, CIB, Main Steam Line Isolation, and CIA.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 009

Which one of the following contains BOTH conditions that will result in indicated reactor power being **LOWER** than actual reactor power?

- A. Source Range pulse height discrimination set too LOW.
Intermediate Range compensating voltage set too LOW.
- B. Source Range pulse height discrimination set too HIGH.
Intermediate Range compensating voltage set too HIGH.
- C. Source Range pulse height discrimination set too LOW.
Intermediate Range compensating voltage set too HIGH.
- D. Source Range pulse height discrimination set too HIGH.
Intermediate Range compensating voltage set too LOW.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 010

Following a Unit trip, Intermediate Range Startup rate is approximately -1/3 decade per minute on both channels.

Current indication on Intermediate Range channels are as follows:

- N35 = $5E^{-7}$ amps
- N36 = $2E^{-8}$ amps

Based upon the above indications, which one of the following describes the sequence for Source Range Channel N-31 and N-32 energization?

- A. Both Source Range channels will energize when N-35 reaches its setpoint.
- B. Both Source Range channels will energize when N-36 reaches its setpoint.
- C. N-31 will energize when N-35 reaches its setpoint. N-32 will energize when N-36 reaches its setpoint.
- D. N-31 will energize when N-36 reaches its setpoint. N-32 will energize when N-35 reaches its setpoint.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 011

Given the following conditions:

- The Unit is in Mode 1. All systems are in NSA.
- All Tavg channels are approximately 3°F higher than Tref.

Which one of the following modes on the Rod Control System Mode Selector Switch will provide the **FASTEST** rod speed if rod motion is demanded?

- A. Manual
- B. Automatic
- C. Control Bank "A"
- D. Shutdown Bank "A"

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 012

Given the following conditions:

- A Reactor Trip has occurred from 100% power.
- Actions of E-0, Reactor Trip Or Safety Injection are being performed.
- The operating crew is checking if SI flow should be terminated when it is determined that RCS subcooling on the ICCM is less than the required 43°F.

Which one of the following describes the method used to determine whether RCS subcooling is adequate?

- A. Minimum required subcooling is determined using the SPDS; actual RCS subcooling is calculated by the IPC.
- B. Actual RCS subcooling is determined using PRZR pressure and T-hot; minimum required subcooling is determined by the SPDS.
- C. Minimum required subcooling is determined using an EOP Attachment; RCS subcooling is determined using PRZR pressure and T-hot.
- D. RCS subcooling is determined using the ICCM; minimum required subcooling is determined using an EOP attachment.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 013

Which one of the following correctly completes the following description of CRDM Shroud Cooling Fan operation?

With all plant systems in their normal alignments, [1VS-F-2C], CRDM Shroud Fan would start in the _____ if [1VS-F-2A], CRDM Shroud Fan is NOT racked in on bus _____, and the diesel loading sequence signal is received.

- A. auto mode; 8N
- B. auto mode; 8P
- C. manual mode; 8N
- D. manual mode; 8P

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 014

Given the following conditions:

- A loss of offsite power has occurred.
- All equipment has started and is operating as designed.

Which one of the following describes how Containment temperature is controlled under these conditions?

- A. All Containment Air Recirculation Fans automatically sequence onto the EDGs.
- B. Containment Air Recirculation Fans will automatically start when their control switches are placed in 'AUTO AFTER STOP'.
- C. Containment Air Recirculation Fans must be manually started as necessary to control containment temperature.
- D. Containment Air Recirculation Fans "A" and "B" automatically sequence onto the EDGs. Fan "C" must be manually started on the bus it is aligned to.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 015

The Unit is operating at 80% power. All systems are in NSA.

Smoke is detected in the vicinity of MCC1-E5, and as a result the operating crew de-energizes MCC1-E5.

Subsequently, a LOCA inside Containment results in a Reactor Trip, Safety Injection and a Containment Spray actuation.

Which one of the following describes the response of the Quench Spray System?

Quench Spray Pump...

- A. "A" starts and injects. "B" starts but does not provide spray flow.
- B. "B" starts and injects. "A" starts but does not provide spray flow.
- C. "A" and "B" both start, but neither train provides spray flow.
- D. "A" and "B" both start and both trains provide spray flow.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 016

Given the following conditions:

- A LOCA has occurred.
- The following engineered safeguards actuations have initiated:
 - SI
 - CIA
 - CIB
 - MSLI
- All equipment is operating as designed.

Which one of the following is the **MINIMUM** necessary to electrically stop a Quench Spray Pump?

- A. Reset SI only.
- B. Reset CIB only.
- C. Reset SI and CIA. (Both required).
- D. Reset SI, CIA and CIB. (All required).

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 017

Given the following conditions:

- Following a Reactor Trip due to a complete loss of CCR, all RCPs are stopped.
- All systems are operating as designed.

Which one of the following describes the response of the core exit TCs following trip of the RCPs?

Core exit temperature initially _____ and then _____.

- A. rises; drops
- B. drops; rises
- C. rises; stabilizes
- D. drops; stabilizes

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 018

With the Unit operating at 80% power, all systems in NSA, [1WR-P-1A], Reactor Plant River Water Pump trips. As a consequence, Reactor Plant River Water is available to the...

- A. "B" LHSI Pump [1SI-P-1B] only.
- B. "B" HHSI Pump [1CH-P-1B] only.
- C. "A" LHSI Pump [1SI-P-1A] and the "B" LHSI Pump [1SI-P-1B].
- D. "A" HHSI Pump [1CH-P-1A] and the "B" HHSI Pump [1CH-P-1B].

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 019

Given the following conditions:

- A LOCA has occurred.
- The operating crew is performing actions of ES-1.2, Post LOCA Cooldown And Depressurization.
- Pressurizer level is stable at 58%.
- RCS pressure is stable at 1680 psig.
- The Unit Supervisor determines that a Charging/HHSI pump can be stopped in accordance with EOP Attachment 7-A, Criteria For Stopping 1 Of 2 Running Charging/HHSI Pumps, Subcooled Conditions.

When the RO stops the Charging/HHSI Pump, which one of the following describes the Pressurizer level response?

- A. PRZR level will remain at its current value.
- B. PRZR level will rise until charging is realigned to the VCT.
- C. PRZR level will drop until normal charging and letdown are restored.
- D. PRZR level will drop until RCS pressure stabilizes at a lower value, then will stabilize.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 020

Given the following:

- The Unit is operating at 90% power with all systems in NSA.
- [GW-TK-1A], Gaseous Waste Decay Tank discharge is in progress.
- [1GW-F-1A], GW Disposal Blower is operating.
- [TV-1GW-103], GW Decay Tank Disch to CTWR Valve is open.
- [TV-1GW-103A2], GW Decay Tank Bleed Valve is open.
- [1GW-D-1-1A], GW Disposal Damper associated with the "A" GW Disposal Blower [1GW-F-1A] is open.

Then, [RM-1GW-108B], GW Disposal Blower Discharge Radiation Monitor alarms on High-High gaseous activity.

Which one of the following completely describes the Gaseous Waste System automatic response?

- A. [1GW-F-1A], GW Disposal Blower trips.
- B. [1GW-D-1-1A], GW Disposal Damper shuts.
- C. Valve [TV-1GW-103] and valve [TV-1GW-103A2] shut.
- D. Blower [1GW-F-1A] trips and damper [1GW-D-1-1A] shuts.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 021

The Unit is operating at 80% power with all systems in NSA, when a Small Break LOCA in containment results in a Reactor Trip and SI Signal.

- 4160 Volt Emergency Bus "1AE" supply breaker from offsite power trips.
- No. 1 EDG fails to start.

Which one of the following describes the status of the charging pumps?

Charging Pump "A" _____; Charging Pump "B" _____.

- A. running; running
- B. not running; running
- C. running; not running
- D. not running; not running

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 022

Given the following conditions:

- A loss of offsite power has occurred.
- RCS cooldown is being performed in accordance with ES-0.2, Natural Circulation Cooldown.
- RCPs cannot yet be started.
- The RO is depressurizing using auxiliary spray.
- Pressurizer level rapidly rises from 24% to 66%.

Which one of the following describes the reason for the Pressurizer level increase?

- A. Loss of Secondary Heat Sink.
- B. Portions of the RCS have reached saturation temperature.
- C. HHSI flow is refilling the Pressurizer as RCS pressure drops.
- D. Cooldown rate is not high enough to maintain Pressurizer level with auxiliary spray in service.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 023

Given the following:

- A Unit startup is in progress and all nuclear instrumentation is observed to be operating normally.
- Power Range Channel N-43 is indicating 11%.
- Power Range Channels N-41, N-42 and N-44 are indicating 9%.

Which one of the following is correct concerning Reactor Protection System trips?

- A. Power Range, high setpoint trip and Source Range high flux trip are enabled.
- B. Power Range, low setpoint trip and Source Range high flux trip are disabled.
- C. Power Range, high setpoint trip and Intermediate Range high flux trip are enabled.
- D. Power Range, low setpoint trip and Intermediate Range high flux trip are disabled.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 024

Given the following conditions:

- The Unit was operating at 68% power.
- An automatic Reactor Trip occurred.
- The cause of the trip was determined to be LOW flow in RCS Loop "A".
- The cause of the trip was determined to be an instrument failure.

Which one of the following input failures caused the Reactor Trip?

- A. The Loop "A" high pressure side flow input failed high.
- B. The Loop "A" high pressure side flow input failed low.
- C. One Loop "A" low pressure side flow input failed high.
- D. One Loop "A" low pressure side flow input failed low.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 025

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- [PT-1MS-446], First Stage Pressure is selected for Tref input to Rod Control System. It begins to fail DOWNSCALE.

Assuming **NO** action by the crew, which one of the following primary plant parameters will initially **INCREASE** as a result of the transmitter failure?

- A. Charging flow
- B. RCS Tavg
- C. Reactor power
- D. RCS loop Delta-T

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 026

Given the following conditions:

- A Unit startup is in progress with the main steam stop valves closed.
- The operating crew is preparing to warm up the main steam lines.

Which one of the following actions will cause "A" SG pressure to **INCREASE** in this plant configuration?

- A. Decrease SG Atmospheric Dump Valve controller output.
- B. Decrease SG Atmospheric Dump Valve controller setpoint.
- C. Increase Main Steam Dump pressure controller output.
- D. Increase Main Steam Dump pressure controller setpoint.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 027

Given the following conditions:

- A Large Break LOCA has occurred.
- Both hydrogen recombiners are in service.
- The following Control Room annunciator alarm light turns 'OFF':
 - [A2-18], A-HYDROGEN RECOMBINER RUNNING

Which one of the following describes the effect on the removal of hydrogen from Containment?

- A. Hydrogen concentration will remain below 4% with only one recombiner in operation.
- B. Hydrogen concentration will rise above 4% but remain below 13% with only one recombiner in operation.
- C. Hydrogen concentration will remain below 4% only if the Containment Purge System is placed in service in addition to the recombiner.
- D. Hydrogen concentration will remain below 4% only if Containment Spray is placed in service in addition to the recombiner.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 028

The Unit is in Mode 1. All systems are in NSA.

Which one of the following describes the normal operation of the Spent Fuel Pool Purification System?

- A. Two purification circulating pumps take suction from the spent fuel pool skimmers. Each pump discharges through a separate filter and ion exchanger.
- B. Either or both of two purification circulating pumps take suction from submerged piping in the Spent Fuel Pool. Each pump discharges through a separate filter and a common ion exchanger.
- C. One purification circulating pump takes suction on submerged piping in the Spent Fuel Pool. The other pump is aligned for RWST purification. Each pump discharges through separate filters and ion exchangers.
- D. One purification pump takes suction from the spent fuel pool skimmers. The other pump is aligned for RWST purification. Each pump discharges through separate filters and ion exchangers.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 029

Given the following conditions:

- A Unit startup is in progress following a mid-cycle outage.
- The reactor is critical at $1E^{-8}$ amps.

A condenser steam dump valve fails partially open.

Assuming **NO** action by the operating crew, which one of the following describes the immediate effect on the plant?

- A. RCS Temperature INCREASES; Power INCREASES
- B. RCS Temperature DECREASES; Power INCREASES
- C. RCS Temperature INCREASES; Power DECREASES
- D. RCS Temperature DECREASES; Power DECREASES

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 030

Which one of the following conditions will **PREVENT** the No. 1 EDG output breaker from closing to energize 4KV Bus "1AE" following a loss of power?

- A. [ACB-1A10], Emergency Bus "1AE" Feeder Breaker has an undervoltage trip.
- B. [ACB-1A10], Emergency Bus "1AE" Feeder Breaker has an overcurrent trip.
- C. [ACB-41C], Normal 4KV Bus "1A" Feeder Breaker has an overcurrent trip with bus "1AE" normal feeder breaker control switch position in 'Auto After Close'.
- D. [ACB-41C], Normal 4KV Bus "1A" Feeder Breaker has an undervoltage trip with bus "1AE" normal feeder breaker control switch position in 'Auto After Close'.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 031

Given the following conditions:

- The Unit is in Mode 6.
- RHR is in service.
- RCS temperature is 139°F.
- RCS boron concentration is 1822 ppm.
- RCS drain down is in progress in preparation for refueling.

[MOV-1RH-758], RHR Heat Exchanger Flow Control Valve begins to drift in the closed direction due to an electrical problem.

Assuming **NO** action by the operating crew, which one of the following describes the effect of this failure on plant operation?

- A. RCS cooldown to a temperature below the RCS boron solubility limit.
- B. Loss of NPSH to the operating RHR pump due to increased temperature.
- C. OPPS actuation due to overpressurization of the RCS.
- D. Loss of RHR letdown and uncontrolled RCS level increase.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 032

Given the following conditions:

- The Unit is in Mode 4.
- RCS cooldown is in progress on RHR Train "B".
- CCR Train "A" and Train "B" are aligned to provide cooling water to RHR.

Which one of the following describes the flow limits placed on the CCR System in this alignment, and the method used to determine actual flow?

- A. Total CCR system flow is limited to 4500 gpm. The actual flow is determined by adding the flows on the 8 inch, 14 inch, and 24 inch CCR headers.
- B. Each CCR pump is limited to a total of 6500 gpm. The actual flow is determined by adding the flows on the 8 inch, 14 inch, and 24 inch CCR headers.
- C. Total CCR flow through the RHR heat exchanger is 4500 gpm. The actual flow is determined directly from the 24 inch CCR header.
- D. Total CCR flow through the RHR heat exchanger is 6500 gpm. The actual flow is determined directly from the 24 inch CCR header.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 033

Surveillance Verification Log L5 is being performed for the 0000 - 0800 shift.

The RO determines that the NIS Cabinet power range indication is NOT within allowable limits.

Per 1OM-54.1.A, Station Logs, which one of the following describes how this is required to be documented in the L5 log?

- A. Circle all readings in red pen that are not in compliance. Unit Supervisor must initial the L5 log in the time column next to the unsatisfactory check.
- B. Circle all readings in red pen that are not in compliance. Details of the unsatisfactory check must be documented in the remarks section. Unit Supervisor must review the log at least once every shift.
- C. Mark 'UNSAT' in the time column opposite the unsatisfactory check. Record details of the check in the remarks section. Unit Supervisor must review the log prior to end of shift.
- D. Mark 'UNSAT' in the time column opposite the unsatisfactory check. Record details of the check in the remarks section. Unit Supervisor must initial the L5 log in the time column next to the UNSAT comment.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 034

Given the following:

- [1QS-MR-1A], Refueling Water Refrigeration Unit is 'ON'.
- One refueling water recirculation pump is running in 'SLOW'.
- [TS-1QS200A2], Refrigeration Unit Operating Thermostat is actuated.

Using the diagram provided, which one of the following describes the status of the refueling water refrigeration unit?

[1QS-MR-1A], Refueling Water Refrigeration Unit is...

- A. started, and liquid line solenoid is energized to open.
- B. stopped, and liquid line solenoid is energized to close.
- C. started, and liquid line solenoid is deenergized to open.
- D. stopped, and liquid line solenoid is deenergized to close.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 035

Given the following conditions:

- The Unit has been at 100% power for 3 weeks. All systems are in NSA.
- RCS boron concentration is 1100 ppm.
- A controlled power reduction to 50% is to be performed.

Using the references provided and maintaining control rods at their current position, which one of the following describes the **MINIMUM** amount of boric acid required to initially maneuver the plant to 50% power?

- A. 900 gallons
- B. 1100 gallons
- C. 1300 gallons
- D. 1500 gallons

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 036

Regarding Technical Specification **SAFETY LIMITS**, which one of the following core limitations does the OT Delta-T Reactor Trip prevent exceeding?

- A. Power Density (KW/ft)
- B. Departure from Nucleate Boiling (DNB)
- C. Total Core Power
- D. Axial Flux Difference (AFD)

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 037

Given the following conditions:

- A reactor startup is in progress.
- Control Bank "A" withdrawal is in progress.
- The last two 1/M plots indicate that criticality will be achieved on Control Bank "B" at approximately 100 steps.
- Estimated Critical Position is Control Bank "C" at 144 steps.

Per 10M-50.4.D, Reactor Startup From Mode 3 To Mode 2, which one of the following actions is required for these conditions?

- A. Trip the reactor and initiate emergency boration.
- B. Stop the startup and determine whether criticality will be within 500 pcm of the ECP prior to proceeding.
- C. Insert all control banks to zero steps, verify shutdown margin and recalculate the ECP.
- D. Continue the startup to obtain one additional 1/M data point to validate the accuracy of the plot.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 038

Given the following conditions:

- The control rod full out position is 230 steps.
- The required bank overlap for the current fuel cycle is 102 steps.

During rod withdrawal, when Control Bank "B" reaches full out position, what will be the position of Control Bank "C"?

- A. 000 steps
- B. 102 steps
- C. 128 steps
- D. 230 steps

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 039

The Unit Supervisor has directed a Unit shutdown based on RCS activity exceeding TS 3.4.8 limits.

In the event of a subsequent SGTR, which one of the following actions is designed to limit the release of radioactivity?

- A. MSIVs are closed.
- B. SG atmospheric dump valve setpoints are raised.
- C. RCS is cooled down below 500°F.
- D. Maximum condensate polishers are placed in service.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 040

The Unit is in Mode 5. Preparations are being made to enter Containment.

Per 1OM-44C.4.A, Containment Purge Supply And Exhaust System Startup, which one of the following describes the correct sequence for initiating a containment purge to the ventilation vent?

- A. Open supply and exhaust dampers, start [1VS-F-5], CNMT Purge Exhaust Fan. If desired, start [1VS-HV-5], CNMT Purge Vent Sup Fan after ensuring the NORMAL/REFUELING control switch is in the 'NORMAL' position.
- B. Open supply and exhaust dampers, start [1VS-F-5], CNMT Purge Exhaust Fan. If desired, start [1VS-HV-5], CNMT Purge Vent Sup Fan after ensuring the NORMAL/REFUELING control switch is in the 'REFUELING' position.
- C. Start [1VS-F-5], CNMT Purge Exhaust Fan. Ensure the supply and exhaust dampers are open. Place the NORMAL/REFUELING control switch in the 'NORMAL' position, and start [1VS-HV-5], CNMT Purge Vent Sup Fan.
- D. Start [1VS-F-5], CNMT Purge Exhaust Fan. Ensure the supply and exhaust dampers are open. Place the NORMAL/REFUELING control switch in the 'REFUELING' position, and start [1VS-HV-5], CNMT Purge Vent Sup Fan.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 041

Who, by title, can authorize a person to receive a radiation dose in excess of the Beaver Valley Administrative TEDE limits per 1/2-ADM-1631, Exposure Control?

- A. Site Senior Vice President
- B. Plant General Manager
- C. Superintendent, Operations
- D. Manager, Health Physics

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 042

The Unit is at 97% power. All systems are in NSA.

The RO withdraws control rods 2 steps for Tavg control. When the In-Hold-Out switch is released, rod motion continues.

The following alarms are received:

- [A4-46], Tavg Deviation from Tref
- [A4-51], Loop Tavg High

The rod motion stops prior to any operator action occurring.

Which one of the following describes an **INITIAL** reactivity effect of the rod motion?

- A. The positive reactivity added by FTC and MTC result in a higher total power defect.
- B. The negative reactivity added by FTC and MTC result in a higher total power defect.
- C. The positive reactivity added by FTC and MTC result in a lower total power defect.
- D. The negative reactivity added by FTC and MTC result in a lower total power defect.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 043

Given the following conditions:

The Unit is at 100% power with all systems in NSA.

- [A4-97], ROD CONTROL SYSTEM NON-URGENT ALARM illuminates.
- [A4-126], ROD BOTTOM ROD DROP is illuminated.
- One Control Bank "D" rod is indicating '0' steps.
- The RO places rod control in 'MANUAL'.
- Other Control Room annunciators illuminate as expected for plant conditions.
- Reactor power indicates as follows:
 - N41 - 100.1%
 - N42 - 103.3%
 - N43 - 100.1%
 - N44 - 94.7%

Which one of the following interlocks or protective features must be cleared before automatic rod withdrawal may be reinstated?

- A. The Rod Control System Non-Urgent condition must be cleared.
- B. The 'Loop OP Delta T Auto Turbine Runback Block Auto Rod Withdrawal' circuitry must be reset.
- C. The 'NIS Power Range High Setpoint Overpower Rod Stop Block Auto Rod W/D' must be cleared.
- D. The 'Power Range Channel Deviation' must be cleared at the NIS Comparator and Rate Drawer.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 044

Given the following conditions:

A load rejection has occurred from 100% power. The plant has stabilized at 82% power.

- The RO determines that 2 Control Bank "D" rods did not move during the load rejection.
- The rods are approximately 16 steps above the remainder of Control Bank "D".
- The Rod Control System Urgent Failure and Non-Urgent Failure alarms are NOT lit.

Which one of the following describes the required action for this condition?

- A. Initiate a boration to increase shutdown margin by an amount equal to the stuck rod worth and align the remainder of Control Bank "D" rods with the stuck rods.
- B. Initiate boration to increase shutdown margin by an amount determined by the shutdown margin OST and commence a plant shutdown to Mode 3.
- C. Trip the reactor and initiate safety injection to borate the RCS to achieve adequate shutdown margin.
- D. Trip the reactor and commence emergency boration in accordance with FR-S.1, Response To Nuclear Power Generation/ATWS.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 045

The Unit is at 60% power.

- [1SI-P-1A], LHSI Pump is out of service.
- [1QS-P-1A], Quench Spray Pump is out of service.

A Large Break LOCA occurs. The operating crew takes action in accordance with E-1, Loss Of Reactor Or Secondary Coolant.

The following conditions currently exist:

- | | |
|------------------------|----------------------------|
| • Containment pressure | 32 psig, DECREASING slowly |
| • RCS pressure | 100 psig, STABLE |
| • Pressurizer level | Offscale LOW |

All actuations have occurred as required.

With the reference provided, if the RWST was at its minimum level for operability when the event occurred, what is the approximate **MINIMUM** time before transition to ES-1.3, Transfer To Cold Leg Recirculation is required?

- A. One hour
- B. Two hours
- C. Three hours
- D. Four hours

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 046

Which one of the following describes the operation of RCPs during the performance of FR-C.1, Response To Inadequate Core Cooling?

- A. If RCPs are available, they are started early in the event to provide forced flow ONLY if seal injection and CCR are available.
- B. If RCPs are available, they are started early in the event to provide forced flow EVEN IF seal injection and CCR are NOT available.
- C. At least 1 RCP is started to provide forced flow and mixing of RCS water after secondary depressurization has resulted in SI accumulator injection.
- D. At least 1 RCP is started to provide forced flow of the RCS when secondary depressurization is ineffective in restoring adequate core cooling.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 047

Given the following conditions:

- An ATWS has occurred.
- The operating crew is performing the actions of FR-S.1, Response To Nuclear Power Generation/ATWS.
- The RO has initiated emergency boration.
- All equipment has operated as designed.
- SI is NOT actuated.
- RCS pressure is 2210 psig and trending DOWN.
- Tavg is 567°F and trending DOWN.

Which one of the following describes plant response to initiation of the boration?

- A. Boric Acid Tank level will drop at a rate approximately equal to charging flow.
- B. Volume Control Tank level will drop at a rate approximately equal to charging flow.
- C. Refueling Water Storage Tank level will drop at a rate approximately equal to charging flow.
- D. Pressurizer level will rise at a level approximately equal to charging flow.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 048

Given the following conditions:

- The Unit is in Mode 5.
- [1CC-E-1A], CCR Heat Exchanger is in service.
- [TCV-1CC-100], CCR Temperature Control Valve is in 'MANUAL'.
- The operating CCR pump trips on overcurrent.
- There are no CCR pumps in standby.

Prior to any action by the operating crew, which one of the following describes system temperature response at the outlet of 1CC-E-1A over the next 10 seconds?

- A. River Water temperature will RISE.
CCR temperature will RISE.
- B. River Water temperature will DROP.
CCR temperature will DROP.
- C. River Water temperature will RISE.
CCR temperature will DROP.
- D. River Water temperature will DROP.
CCR temperature will RISE.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 049

Given the following conditions:

- Reactor Trip testing is in progress on Train "A".
- Reactor Trip Breaker "A" is open.
- Reactor Trip Bypass Breaker "A" is closed.
- A transient occurs requiring a reactor trip.
- The RO attempts to manually trip the reactor but the reactor does NOT trip.

Which one of the following describes a failure that has contributed to the reactor trip failure?

- A. Reactor Trip Breaker "B" Undervoltage Trip coil failed to energize.
- B. Reactor Trip Breaker "B" Shunt Trip coil failed to deenergize.
- C. Reactor Trip Bypass Breaker "A" Undervoltage Trip coil failed to deenergize.
- D. Reactor trip Bypass Breaker "B" Shunt Trip coil failed to energize.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 050

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- A Steam Line Break occurs downstream of MSIV "A".
- A Main Steam Line Isolation Signal is generated.

Which one of the following describes the maximum allowable closure time of the MSIVs and the associated reason?

- A. The MSIVs must close within 5 seconds to limit the pressure rise inside containment.
- B. The MSIVs must close within 5 seconds to minimize the reactivity effects of the RCS cooldown.
- C. The MSIVs must close within 30 seconds to limit the pressure rise inside containment.
- D. The MSIVs must close within 30 seconds to minimize the reactivity effects of the RCS cooldown.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 051

Given the following conditions:

- The Unit is operating at 100% power. All systems are in NSA.
- The following alarm is received in the Control Room:
 - [A1-10], VITAL BUS 1 TROUBLE
- The operating crew determines that NI Rack Channel 1 is deenergized.
- DC Bus 1 locally indicates 125 volts.

Which one of the following actions is required?

- A. Trip the reactor; enter E-0, Reactor Trip Or Safety Injection.
- B. Trip the reactor; enter E-0 and defeat containment pressure bistable channel 1 to inhibit CIB.
- C. Restore Vital Bus 1 by bypassing the inverter; control plant parameters manually as necessary in accordance with 1OM-38.4.AAA, Vital Bus 1 Trouble.
- D. Restore Vital Bus 1 by aligning to DC Bus 1; remove inverter from service and restore letdown in accordance with 1OM-38.4.AAA, Vital Bus 1 Trouble.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 052

Annunciator [A11-123], MOTOR DRIVEN FIRE PUMP RUNNING is in alarm and is valid. This indicates a fire in which one of the following areas:

- A. Main Transformer
- B. Cable Tray Mezzanine
- C. Diesel Generator Building "A"
- D. Turbine Generator Bearings and Enclosure

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 053

Given the following conditions:

- A small fire has developed in the Control Room.
- The Shift Manager has determined that a Control Room evacuation is required.
- A manual reactor trip has been initiated and all control rods have been verified fully inserted.

Which one of the following describes the **MINIMUM** action required to verify Turbine Trip?

- A. Verify turbine throttle valves all closed or verify governor valves all closed prior to exiting the Control Room.
- B. Verify turbine throttle valves all closed and verify governor valves all closed prior to exiting the Control Room.
- C. Verify turbine throttle valves all closed or verify governor valves all closed in the Turbine Building prior to manning the Emergency Shutdown Panel.
- D. Verify turbine throttle valves all closed and verify governor valves all closed in the Turbine Building prior to manning the Emergency Shutdown Panel.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 054

Given the following conditions:

- The Unit was operating at 100% power.
- A Reactor Trip occurred due to a LOCA.
- All Safety Injection Systems FAILED to operate.
- FR-C.1, Response To Inadequate Core Cooling has been entered.
 - The Unit Supervisor has directed the depressurization of all intact SGs to 150 psig using the condenser steam dumps.
 - All MSIVs are open and the condenser is available.
 - The steam dump controller (AM-1MS-464B) is in manual.
 - The steam dump control mode selector switch is in the STM PRESS position, and SG depressurization is underway.
 - PRZR pressure is > 1950 psig, and the Block Steamline SI Switches have NOT been placed in the 'BLOCK' position.
 - As the SG depressurization progresses, the steam flow automatically stops.

Which one of the following has caused the steam flow to stop?

- A. Steam generator pressure has reached 150 psig, or containment isolation due to exceeding 1.5 psig pressure setpoint in containment.
- B. Steam header pressure has dropped below the setpoint on AM-1MS-464B, or Tavg is below 541°F and no action has been taken to defeat the Tavg interlock.
- C. Tavg is below 541°F and no action has been taken to defeat the Tavg interlock, or main steamline isolation due to exceeding the low steam pressure rate sensitive setpoint.
- D. Containment isolation due to exceeding 1.5 psig pressure setpoint in containment, or steam header pressure has dropped below the setpoint on AM-1MS-464B.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 055

Given the following conditions:

- A Reactor Trip and Safety Injection have occurred.
- The operating crew was performing the actions of E-1, Loss Of Reactor Or Secondary Coolant.
- The Unit Supervisor was concerned about conflicting indications and the crew entered ES-0.0, Rediagnosis.
- There is an increasing trend on [RM-1MS-101], Auxiliary Feed Pump Turbine Exhaust Monitor and [RM-1MS-100A], Main Steam Safety Valve Effluent Monitor.

Which one of the following describes how the operating crew will transition to the correct procedure?

- A. Go directly to the appropriate E-3 or ECA-3 series procedure.
- B. Return to E-0 diagnostic steps to verify indications that will confirm the event in progress.
- C. Return to E-1 step in effect and use the Symptomatic Response/Unexpected Conditions page to direct entry to E-3.
- D. Direct Chemistry sample of SGs to confirm radiation monitor readings prior to making a determination of appropriate procedure entry.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 056

Given the following conditions:

- A Main Steam Line Break has occurred.
- All equipment actuated as required.
- The operating crew has isolated the faulted SG.
- The Unit Supervisor has directed transition to ES-1.1, SI Termination.
- SI, CIA, and CIB have been reset.
- RCS pressure is 1775 psig and rising slowly.
- There are NO other indications of RCS leakage.

Which one of the following describes the sequence of steps to terminate SI?

- A. Stop 1 HHSI pump.
Check RCS pressure stable and align normal charging.
Stop BOTH LHSI pumps.
- B. Stop 1 HHSI pump.
Check RCS pressure stable and align normal charging.
Stop 1 LHSI pump. Ensure RCS pressure remains stable, then stop the second LHSI pump.
- C. Align normal charging.
Check RCS pressure stable and stop 1 HHSI pump.
Stop BOTH LHSI pumps.
- D. Align normal charging.
Check RCS pressure stable and stop 1 HHSI pump.
Stop 1 LHSI pump. Ensure RCS pressure remains stable, then stop the second LHSI pump.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 057

In accordance with Technical Specifications, which one of the following conditions will result in the declaration of at least one **INOPERABLE** control rod?

- A. AFD exceeding operating limits.
- B. A rod bottom light remains extinguished after a reactor trip.
- C. Control Bank "D" rods are trippable but cannot be moved electrically.
- D. One Control Bank "D" rod indicates 210 steps with Control Bank "D" demand at 200 steps.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 058

The Unit is operating at 100% power when the following conditions occur:

- A PRZR spray valve sticks open and PRZR pressure has lowered to 1800 psig.
- Reactor Trip Breakers are 'SHUT'.
- Neutron flux is NOT dropping.

Which one of the following describes an Immediate Manual Action?

- A. Verify auxiliary feedwater status.
- B. Verify main steam line isolation.
- C. Isolate condenser steam dump valves.
- D. Initiate emergency boration of the RCS.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 059

Pressurizer Relief Tank pressure indicates 15 psig on PI-1RC-472. The operating crew suspects that a PORV opened inadvertently and is now stuck partially open.

Which one of the following indications confirm that a PORV is stuck partially open?

- A. PORV relief line temperature stabilized at 213°F. PRZR safety relief line temperatures indicate 180°F and very slowly rising.
- B. PORV relief line temperature stabilized at 250°F. PRZR safety relief line temperatures indicate 217°F and very slowly rising.
- C. PORV relief line temperature stabilized at 213°F. PRZR safety relief line temperatures indicate 110°F and stable.
- D. PORV relief line temperature stabilized at 250°F. PRZR safety relief line temperatures indicate 110°F and stable.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 060

Given the following conditions:

- The Unit is at 100% power, steady state. All systems are in NSA.
- Pressurizer level is on program and stable.
- Pressurizer pressure is 2235 psig and stable.
- Charging flow on FI-1CH-122 indicates 90 GPM.

A malfunction results in the loss of Pressurizer heaters. When heaters are restored, the following conditions exist:

- Pressurizer level is on program and stable.
- Pressurizer pressure is 2000 psig.

Which one of the following describes the approximate value for charging flow indication on FI-1CH-122?

- A. 0 GPM
- B. 80 GPM
- C. 90 GPM
- D. 100 GPM

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 061

Given the following conditions:

- A reactor startup is in progress.
- Both Intermediate Range channels indicate approximately 5 E^{-11} amps.
- Source Range Channel N-31 fails DOWNSCALE.

Which one of the following describes the required operator response and the reason for the response?

- A. Suspend the reactor startup; with only one source range channel operable, the minimum required Source Range High Flux Trip protection is not met.
- B. Continue the reactor startup; with only one source range channel operable; 48 hours is allowed to restore two channels to service.
- C. Suspend the reactor startup; source range channels are not required to trip the reactor; however, the source range monitoring functions must be available.
- D. Continue the reactor startup; the Intermediate Range Neutron Flux Trip and the Power Range Neutron Flux-Low Trip provide the necessary core protection.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 062

Given the following conditions:

- A Small Break LOCA has occurred.
- The operating crew is performing the actions of ES-1.2, Post LOCA Cooldown And Depressurization.
- Safety Injection pumps have been stopped.
- Normal charging is aligned.
- The crew is depressurizing the RCS using normal spray.

Which one of the following describes the strategy and the basis for the continuing depressurization?

- A. Maximize subcooling to ensure continued RCP operation.
- B. Minimize subcooling to reduce RCS break flow.
- C. Maximize subcooling to prevent a challenge to the Core Cooling Critical Safety Function.
- D. Minimize subcooling to ensure Pressurizer level remains above the lower limit to allow heater operation during the RCS cooldown.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 063

The Unit is at 100% power. All systems are in NSA.

The following alarms are received in the Control Room:

- [RM-1SV-100], Condenser Air Ejector Vent High
- [RM-BD-101], High Capacity SG Blowdown High-High
- [RM-1MS-102A], N-16 Steam Generator "A" Leak Monitor High-High

RM-BD-101 and RM-1MS-102A are stable at or near their alarm setpoints.
RM-1SV-100 is stable above the High alarm setpoint.

Which one of the following describes the significance of the alarm status listed above?

- A. The two radiation monitors in High-High alarm provide the threshold for tripping the reactor and initiating Safety Injection.
- B. The alarm status of the radiation monitors give an approximate value for RCS primary-to-secondary leak rate.
- C. The rate of increase of any of the three radiation monitors provides the threshold for tripping the reactor and initiating Safety Injection.
- D. The alarm status of the radiation monitors determines the course of action taken for charging and letdown to provide an accurate estimate of the leak rate.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 064

Given the following conditions:

- The Unit was operating at 100% power when a Reactor Trip occurred on low Pressurizer pressure.
- A Steam Generator Tube Rupture was diagnosed and E-3, Steam Generator Tube Rupture was entered.
- E-3, Step No. 31, "Control RCS Pressure And Charging Flow To Minimize RCS-To-Secondary Leakage" is being performed (attached).

Given the following control room indications:

- SG "C" blowdown sample indicates high radiation.
- SG "C" NR level is 32% and dropping.
- Feed flow has been isolated to SG "C".
- SG "A" and "B" levels are slowly lowering.
- PRZR level is 63% and rising.

Which one of the following describes the operator action?

- A. Depressurize RCS.
- B. Lower charging flow.
- C. Turn on PRZR heaters.
- D. Depressurize RCS and lower charging flow.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 065

The Unit is at 50% power during a power increase to 100%.

The following alarms are received in the Control Room:

- 1A, 1B, 1C SG Level Deviation
- 1A, 1B, 1C SG Level Low

The PO determines the following for all 3 SGs:

- SG level is DECREASING.
- Steam flow is STABLE.
- Feed flow is DECREASING.
- Feedwater Regulating Valve positions are all going OPEN.
- Feedwater header pressure is approximately 950 psig and trending DOWN slowly.

Assuming **NO** action has been taken by the operating crew, which one of the following events is the cause of these indications?

- A. Secondary Load Rejection
- B. Loss of Feedwater
- C. [PT-1MS-446], First Stage Pressure Transmitter failed LOW
- D. [PT-1MS-446], First Stage Pressure Transmitter failed HIGH

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 066

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- The following annunciators are received in the Control Room:
 - [A9-97], 125VDC BUS 1 DC SUPPLY ACB OVERCURRENT TRIP
 - [A9-98], 125VDC BUS 1 VOLTAGE LOW
 - [A9-100], 125VDC BATTERY CHGR 1 FAILURE
- 125 Volt DC Bus 1 voltage indicates '0' volts.
- The operating crew enters AOP-1.39.1, Loss Of 125VDC Bus.

Which one of the following describes the action required for this condition?

- A. Perform 1OM-39.4.AAI, 125VDC Bus 1 Voltage Low to restore DC Bus 1.
- B. Enter E-0, Reactor Trip Or Safety Injection and concurrently perform 1OM-39.4.AAI upon completion of Immediate Manual Actions.
- C. Enter E-0, Reactor Trip Or Safety injection and perform 1OM-39.4.AAI when directed to go to procedure and step in effect at the completion of ES-0.1, Reactor Trip Response.
- D. Perform 1OM-39.4.G, Loss Of Battery Charger to restore power to DC Bus 1.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 067

Given the following conditions:

- A Steam generator Tube Rupture has occurred on the "A" SG.
- All equipment is operating as designed.
- "A" SG has been isolated. The following indications exist:
 - "A" SG pressure is 1000 psig and trending UP.
 - "A" SG NR level is 55% and trending UP.

Which one of the following describes how pressure will be controlled on "A" SG prior to completion of the RCS depressurization?

- A. Manually at the condenser steam dump pressure setpoint.
- B. Automatically at the first SG safety valve setpoint.
- C. Automatically with the SG atmospheric dump valve controller in 'Manual'.
- D. Manually by performing secondary depressurization to cool down the RCS below initial target temperature.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 068

Given the following conditions:

- A loss of heat sink has occurred.
- The operating crew is establishing RCS 'Bleed and Feed' in accordance with FR-H.1, Loss Of Secondary Heat Sink.
- The RO opens one PORV. He reports that the other two PORVs will NOT open.

Which one of the following describes the consequences of the PORV failures?

- A. A Red Path on the Core Cooling Critical Safety Function will develop due to loss of RCS inventory with no available makeup.
- B. RCS 'Feed and Bleed' cooling must be established to ensure sufficient SI flow at the operable PORV setpoint.
- C. The RCS may not depressurize quickly enough to ensure sufficient SI flow to provide RCS heat removal, and other RCS openings may have to be established.
- D. 'Bleed and Feed' cooling of the RCS must be terminated and secondary depressurization to inject condensate pump flow must be immediately initiated.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 069

Given the following conditions:

- The Unit is in Mode 6. All systems are in NSA.
- Refueling in progress. The Containment equipment hatch is closed.
 - [RIS-1RM-104A], Containment Purge Exhaust Monitor is in High-High alarm.
 - Containment Purge Supply and Exhaust Fans trip.
 - Containment Evacuation Alarm is sounding.

Which one of the following indications will provide direct confirmation of the event in progress?

- A. [RIS-1RM-215A], Containment Particulate Monitor
- B. [RIS-1VS-103A], Fuel Building Ventilation Exhaust Monitor
- C. [RIS-1VS-107A], Elevated Release Particulate Monitor
- D. [RM-1RM-218A], Control Room Radiation Monitor

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 070

As directed by ECA-0.0, Loss Of All AC Power, the operating crew places the charging pumps in Pull-To-Lock.

The defeat of the charging pump automatic start is to prevent...

- A. an uncontrolled over-pressurization of the RCS, and the resulting increased loss of RCS inventory through the RCP seals when power is restored.
- B. an excessive cooldown of the RCS due to injection of cold RWST water when power is restored.
- C. the unnecessary use of water that may be needed for long term recovery.
- D. a LOCA caused by thermal shock of the RCP seals when power is restored.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 071

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- [TV-1CH-200B], Letdown Orifice Isolation Valve is aligned for service.
- [LT-1RC-459], Pressurizer Level Transmitter fails offscale LOW.
- The RO places the PRZR Level Channel Selector Switch to the correct position.

Which one of the following describes the effect on the plant and the additional action required to stabilize the plant?

- A. Letdown flow will indicate 60 GPM. Turn off backup heaters and adjust charging flow as necessary.
- B. Letdown flow will indicate 0 GPM. Manually energize backup heaters as necessary and establish excess letdown.
- C. Letdown flow will indicate 60 GPM. Turn off backup heaters and establish excess letdown.
- D. Letdown flow will indicate 0 GPM. Manually energize backup heaters as necessary and establish normal letdown.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 072

The operating crew is responding to a loss of heat sink per FR-H.1, Response To Loss Of Secondary Heat Sink.

- All SG wide range levels are offscale LOW.
- RCS 'Bleed and Feed' has been established.
- RCS temperature is approximately 588°F and rising slowly.

Which one of the following describes the preferred method of initiating auxiliary feedwater flow for these conditions?

- A. Feed 1 SG at the highest possible rate to reestablish SG inventory and secondary heat sink.
- B. Feed all SGs at the highest possible rate to establish conditions for natural circulation.
- C. Feed 1 SG at the minimum required flow to prevent possible SG tube failures.
- D. Feed all SGs at the minimum required flow to establish a controllable cooldown rate and prevent loss of RCS inventory.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 073

Given the following conditions:

- The Unit is in Mode 1 at 100% power.
- The operating crew is performing 1OM-15.4.H, Securing A CCR Pump Or Placing The Spare CCR Pump In Service During Two Pump Operation, with the following system status:
 - [1CC-P-1B], Component Cooling Pump is running.
 - [1CC-P-1C], Component Cooling pump is racked on the "1AE" 4KV Bus.
 - [1CC-P-1A], Component Cooling Pump control switch is in Pull-To-Lock.

A loss of offsite power then occurs. No. 2 EDG fails to start.

Two minutes later, the RO announces that annunciator [A6-35], PRI COMP COOL PUMP DISCH PRESS LOW is lit.

Which one of the following is causing annunciator A6-35 to be lit?

- A. PCV-1CC-100, CCR pressure control valve has failed closed.
- B. 1CC-P-1C control switch is in 'After Start'.
- C. 1CC-P-1A is still racked on the "1AE" 4KV Bus.
- D. "1AE" 4KV Stub Bus tie breaker 1E5 has opened as designed.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 074

Given the following conditions:

- A LOCA has occurred.
- The operating crew is performing actions contained in E-1, Loss Of Reactor Or Secondary Coolant.
- The following conditions currently exist:
 - All SI equipment is operating as required.
 - RCS pressure is 80 psig.
 - The STA informs you of the following Critical Safety Function Orange Path conditions:
 - Integrity
 - Containment

Which one of the following describes the correct response to these indications?

- A. Enter FR-P.1, Response To Imminent Pressurizer Thermal Shock Condition. Take action to stop RCS cooldown and reduce RCS pressure. When directed, enter FR-Z.1, Response To High Containment Pressure.
- B. Enter FR-P.1, Response To Imminent Pressurizer Thermal Shock Condition. Ensure LHSI flow is consistent with RCS pressure. Transition to FR-Z.1, Response To High Containment Pressure.
- C. Enter FR-Z.1, Response To High Containment Pressure. When action is complete, transition to FR-P.1, Response To Imminent Pressurizer Thermal Shock Condition. Take action to stop RCS cooldown and reduce RCS pressure, then return to E-1.
- D. Enter FR-Z.1, Response To High Containment Pressure. When action is complete, transition to FR-P.1, Response To Imminent Pressurizer Thermal Shock Condition. Ensure LHSI flow is consistent with RCS pressure, then return to E-1.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 075

Given the following conditions:

- A Reactor Trip has occurred due to loss of offsite power.
- The operating crew is performing actions of ES-0.2, Natural Circulation Cooldown.
- Train "A" of RVLIS is out of service.
- The crew has commenced RCS cooldown and depressurization.
 - RCS pressure is 1780 psig and trending DOWN.
 - RCS Tavg is 448°F and trending DOWN.
 - The RO determines that a safety valve on SG "A" is partially failed open.
 - RCS cooldown rate is approximately 40°F/Hr and can NOT be reduced.
 - Pressurizer level is 35% and trending UP slowly.

Which one of the following actions will be required in accordance with ES-0.2?

- A. Repressurize the RCS to minimize void growth.
- B. Initiate Safety Injection and transition to E-2, Faulted Steam Generator Isolation.
- C. Transition to ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS).
- D. Transition to ES-0.4, Natural Circulation Cooldown with Steam Void In Vessel (Without RVLIS).

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 076

Given the following conditions:

- The reactor has tripped.
- A loss of offsite power subsequently occurs.
- The operating crew has transitioned to ES-0.2, Natural Circulation Cooldown.
- Letdown is isolated and cannot be restored.
- The RO is commencing boration to shutdown boron concentration.

Which one of the following describes the method of ensuring sufficient boration under these conditions?

- A. Commence cooldown to allow additional inventory addition and maintain Pressurizer level greater than 22%.
- B. Maintain a small amount of Pressurizer spray flow to ensure mixing of Pressurizer and RCS.
- C. Allow Pressurizer level to rise to no higher than 75% to accommodate the boric acid volume required.
- D. Commence depressurization using normal spray flow to allow for additional RCS makeup flow from CVCS.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 077

The Control Room has been evacuated due to a fire. The operating crew is performing the actions of 1OM-56C.4.B, Alternate Safe Shutdown Outside Control Room, using Train "B" equipment.

SG narrow range (NR) levels are 10% and trending DOWN in all 3 SGs.

Which one of the following describes the preferred method of maintaining secondary heat sink?

- A. Maintain SG levels 25 - 50% NR by manually increasing Steam Driven Aux Feedwater Pump speed OR by manually throttling [HCV-1MS-104], Residual Heat Release Valve.
- B. Maintain SG levels 25 - 50% WR by manually increasing Steam Driven Aux Feedwater Pump speed OR manually throttling [PCV-1MS-101A, B, C], SG Atmospheric Dump Valves.
- C. Maintain SG levels greater than 50% NR by operating the Dedicated Auxiliary Feedwater Pump OR by manually throttling [HCV-1MS-104], Residual Heat Release Valve.
- D. Maintain SG levels greater than 50% WR by operating the Dedicated Auxiliary Feedwater Pump OR manually throttling [PCV-1MS-101A,B,C], SG Atmospheric Dump Valves.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 078

The Unit has sustained a main steam line break affecting all 3 SGs.

The operating crew is currently performing ECA 2.1, Uncontrolled Depressurization Of All Steam Generators.

The crew has throttled AFW flow to 50 gpm to each SG to minimize the RCS cooldown. Safety Injection Termination Criteria is NOT met.

The following conditions exist:

<u>SG</u>	<u>Level</u>	<u>Pressure</u>
SG "A"	19% WR SLOWLY ↓	320 psig DECREASING
SG "B"	18% WR SLOWLY ↓	310 psig DECREASING
SG "C"	26% WR SLOWLY ↑	380 psig INCREASING

Which one of the following describes the required action and the reason for the action?

- A. Transition to E-2, Faulted Steam Generator Isolation because there is an intact SG available.
- B. Transition to FR-H.1, Loss Of Secondary Heat Sink because there is a RED condition on the Heat Sink Status Tree.
- C. Transition to E-3, Steam Generator Tube Rupture because there is an unexplained increase in SG level.
- D. Continue with ECA 2.1, Uncontrolled Depressurization Of All Steam Generators because Safety Injection termination is not complete.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 079

Given the following conditions:

- The Unit is at 100% power.
- A discharge of [LW-TK-7A], SG Drains Tank is in progress.
- The following alarms are received:
 - [A4-71], Radiation Monitoring High
 - [A4-72], Radiation Monitoring High-High
- [RM-1LW-104], Liquid Waste Effluent Monitor is the initiating alarm.

The PAB Operator reports that the local High-High alarm for RM-1LW-104 is lit. All flow control valves and trip valves in the effluent line are open.

Which one of the following actions will be required next?

- A. Direct the RO to place the liquid waste discharge to cooling tower blowdown mode control switch, HSS-1LW-3 to 'OFF'.
- B. Request Health Physics perform a calibration check or flash the detector with a portable source to determine validity of the alarm.
- C. Request Health Physics immediately sample the tank contents to verify the release permit calculations.
- D. Direct the PAB Operator to locally open the tank recirculation valve to stop the discharge.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 080

Given the following conditions:

- A LOCA has occurred.
- "A" Train safety injection equipment is operating as required.
- "B" Train is deenergized and safety injection equipment can NOT be started.
- The Unit Supervisor has announced transition to E-1, Loss Of Reactor Or Secondary Coolant.
- The Critical Safety Function Status Trees indicate the following:
 - Subcriticality Green
 - Core Cooling Orange
 - Heat Sink Yellow
 - Integrity Orange
 - Containment Orange
 - Inventory Yellow

Which one of the following actions shall be taken?

- A. Transition to FR-C.1, Response To Inadequate Core Cooling.
- B. Transition to FR-C.2, Response To Degraded Core Cooling.
- C. Transition to FR-Z.1, Response To High Containment Pressure.
- D. Continue in E-1 until transition to ES-1.2, Post-LOCA Cooldown And Depressurization to restore RCS inventory with available safety injection equipment.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 081

Given the following conditions:

- The Unit is at 68% power.
- A loss of station instrument air has occurred.
- The operating crew is performing the actions of AOP-1.34.1, Loss Of Station Instrument Air.
- The following alarm is received in the Control Room:
 - [A1-56], STEAMLINE STOP VALVE NOT FULLY OPEN

The crew trips the reactor and enters E-0, Reactor Trip Or Safety Injection. The cause is identified and station instrument air pressure has stabilized at 50 psig.

Which one of the following describes how Tavg will be controlled in E-0?

- A. Condenser steam dumps in 'Plant Trip' Mode
- B. Condenser steam dumps in 'Pressure Control' Mode
- C. Steam generator atmospheric dump valves
- D. Steam generator safety valves

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 082

Given the following conditions:

- The Unit is performing a plant heat up with RCS temperature at 175°F.
- RCS heat up rate is 5°F per hour and will be maintained at this rate until no-load temperature is achieved.
- It is reported that [1QS-38], QS Chem Inj PP 4A & 4C Suct Isol Valve is locked shut.

In accordance with the reference provided, what action, if any, is the minimum required to satisfy Technical Specifications?

- A. Immediately reduce RCS temperature to less than 140°F.
- B. Open and lock open 1QS-38 within 5 hours.
- C. Open and lock open 1QS-38 within 72 hours.
- D. No actions are required, this is the required position for 1QS-38.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 083

Given the following conditions:

- The Unit is operating at 90% power. All systems are in NSA.
- "A" Main Feed Pump has tripped.
- The PO determines that the heater drain pumps and condensate pumps are operating normally.
- The Unit Supervisor refers to AOP-1.24.1, Loss Of Main Feedwater.

Which one of the following actions is required in accordance with AOP-1.24.1, Loss Of Main Feedwater?

- A. Trip the reactor and enter E-0, Reactor Trip Or Safety Injection.
- B. Reduce turbine load to less than 60% in accordance with AOP-1.51.1, Emergency Shutdown.
- C. Check the proper operation of [FCV-1FW-150A], Main Feed Pump "A" Recirculation Valve.
- D. Determine if suction pressure is adequate to attempt restart of "A" Main Feed Pump.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 084

Given the following conditions:

- Unit 1 is in Mode 6.
- Unit 2 is in Mode 1 with all systems in NSA.
- Movement of irradiated fuel is ongoing in the Unit 1 Containment.
- [RM-1RM-218A], Control Room Area Monitor has failed LOW.
- The FAIL light for the radiation monitor is 'OFF'.

In accordance with Technical Specification 3.3.3.1 (attached), what action, if any, is required for the above conditions?

- A. No action is required because the monitor is not required to be operable for this condition.
- B. Within ONE hour the respective Unit 2 Control Room monitor train shall be verified operable.
- C. Within ONE hour, verify that RM-1RM-218B, Control Room Area Monitor is operable.
- D. Within ONE hour, suspend all operations involving movement of irradiated fuel.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 085

The Unit is in Mode 1. All systems are in NSA.

Which one of the following conditions requires the **EARLIEST** action in accordance with Technical Specifications?

- A. [CH-TK-1A], Boric Acid Storage Tank boron concentration is 6800 ppm.
- B. Refueling Water Storage Tank boron concentration is 2355 ppm.
- C. LHSI Pump "A" is inoperable.
- D. Charging Pump "A" suction flow path from the RWST is inoperable.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 086

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- The following annunciator is received in the Control Room:
 - [A4-9], PRESSURIZER CONTROL PRESS HIGH

The RO determines that [PI-1RC-445], Pressurizer Pressure Transmitter is failing HIGH.

Assuming **NO** action by the crew, which one of the following describes the plant response?

- A. One PORV will open.
- B. Two PORVs will open.
- C. Backup heaters will deenergize and spray valves will open.
- D. Backup heaters will deenergize, spray valves will open, and 1 PORV will open.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 087

Given the following conditions:

- The Unit is in Mode 1.
- Spent Fuel is being loaded into shipping casks in the Spent Fuel Pool area.

Health Physics reports that a cask has been dropped. Immediately following the report, the Fuel Building evacuation alarm sounds.

[RM-1VS-103A and B], Fuel Building Ventilation Exhaust Monitors are in alarm.

Based on the above conditions, which one of the following actions is required by AOP-1.49.1, Irradiated Fuel Damage?

- A. Initiate site evacuation.
- B. Manually initiate Control Room isolation.
- C. Reset CREBAPS and verify Control Room ventilation automatically realigns.
- D. Align leak collection exhaust flow to the main filter banks using the Containment Purge System.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 088

Given the following conditions:

- The Unit is at 100% power. All systems are in NSA.
- [PI-1SA-101], Station Air Main Header Pressure has been slowly decreasing and is indicating 98 psig.
- The operating crew enters AOP-1.34.1, Loss Of Station Instrument Air.
- Both station air compressors are running. No reports of air leakage have been received.

Which one of the following actions will be performed next in accordance with AOP-1.34.1?

- A. Bypass the instrument air dryers.
- B. Verify that the diesel air compressor has started.
- C. Verify [TV-1SA-105], Station Air Compressor Header Isolation Valve is closed.
- D. Trip the reactor and enter E-0, Reactor Trip Or Safety Injection.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 089

Given the following conditions:

- You are required to make an entry to a Locked High Radiation Area.
- Your year-to-date exposure is 2.6 Rem, Total Effective Dose Equivalent (TEDE).
- The job is planned to take 20 minutes to complete with 5 minutes transit time each way.
- Transit path radiation levels are 400 mr/hr.
- Work area radiation levels are 1200 mr/hr.

Which one of the following conditions describes your eligibility to perform this task?

- A. You may perform this task provided you are signed onto a High Radiation Area RWP.
- B. You may not perform this task because you will exceed the BVPS TEDE limit.
- C. You may perform this task provided you meet the requirements for a Planned Special Exposure (PSE).
- D. You may not perform the task because your current year to date exposure is already within 80% of the BVPS Administrative TEDE Limit.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 090

Given the following conditions:

- The Unit was at 100% power when a turbine trip and loss of power to both 4KV emergency busses occurs.
- BOTH emergency diesel generators failed to start.
- Reactor power indicates 95% and stable.
- SG safety valves are open.

Which one of the following describes the procedure usage for this event?

- A. Enter E-0, Reactor Trip Or Safety Injection. If reactor trip cannot be verified, transition to FR-S.1, Response To Nuclear Power Generation/ATWS to initiate emergency boration.
- B. Enter E-0, Reactor Trip Or Safety Injection. If reactor trip cannot be verified, initiate emergency boration to shut down the reactor. Enter FR-S.1 when directed to monitor CSF Status Trees upon restoration of power.
- C. Enter ECA-0.0, Loss Of All AC Power. If reactor trip cannot be verified, transition to FR-S.1 to initiate emergency boration.
- D. Enter ECA-0.0, Loss Of All AC Power. If reactor trip cannot be verified, continue in the EOP. Transition to FR-S.1 when directed to monitor CSF Status Trees upon restoration of power.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 091

An event has occurred resulting in a Site Area Emergency.

Health Physics assistance is required for a task being performed in the Auxiliary Building.

Which one of the following Emergency Response Facilities will supply Radiation Control personnel to support the task?

- A. Control Room
- B. Technical Support Center
- C. Operations Support Center
- D. Emergency Operations Facility

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 092

An oil spill has occurred at the site.

Approximately 10 gallons of diesel fuel oil was spilled in the containment area around the Diesel Fuel Oil Storage Tank.

Which one of the following correctly describes the personnel/agencies that must be notified in accordance with AOP-1/2.75.6, Oil Spill?

- A. BVPS Environmental Services
- B. Nuclear Regulatory Commission
- C. Pennsylvania Department of Environmental Protection
- D. Operations Manager and Plant General Manager

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 093

A Unit startup is in progress per 1OM-52.4.A, Raising Power From 5% To Full Load Operation when a loss of instrument air occurs. The operators are performing AOP-1.34.1, Loss Of Station Instrument Air when the main feedwater regulating valves close and a reactor trip occurs.

Which one of the following describes the procedure transitions for this event?

- A. 1OM-52.4.A usage is suspended. AOP-1.34.1 is completed followed by entry to E-0, Reactor Trip Or Safety Injection.
- B. 1OM-52.4.A usage is suspended. AOP-1.34.1 is performed until a RED or ORANGE path condition requires entry to a functional recovery procedure.
- C. E-0, Reactor Trip Or Safety Injection is entered and exited when directed to another specific procedure. AOP-1.34.1 may be performed to aid in plant recovery.
- D. ES-0.1, Reactor Trip Response is entered and exited when directed to procedure and step in effect. AOP-1.34.1 may be performed to aid in plant recovery.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 094

Given the following conditions:

- The Unit is operating at 100% power.
- No. 1 EDG has been out of service for 24 hours and is expected to return to service in 24 hours.
- It is discovered that there is no documentation of the last monthly surveillance on the No. 2 EDG. The most recent documentation is 47 days old.

Which one of the following actions, if any, is required?

- A. Perform the missing surveillance to verify the operability of No. 2 EDG within 1 hour or take additional action in accordance with TS 3.8.2.1.
- B. Perform the missing surveillance to verify the operability of No. 2 EDG within 24 hours or take additional action in accordance with TS 3.8.1.1.
- C. Declare No. 2 EDG inoperable and immediately take action in accordance with TS 3.0.3.
- D. No action required. Because the EDGs are on a staggered test basis, No. 2 EDG is still within the required time interval for operability determination.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 095

Given the following:

- Planned Maintenance on a system requires a portion of the system to be taken out of service for several days.
- A fire hose will be installed to bypass the affected portion of the system.
- The changes to and operation of the system will be considered extensive.
- The changes to the system for this maintenance are one-time only.

Which one of the following document alterations is to be used for this evolution?

- A. Temporary Procedure
- B. Significant Change Procedure Revision
- C. Simple Change Procedure Revision
- D. Procedure Correction

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 096

Given the following conditions:

- You are the Shift Manager.
- The Control Room is being evacuated due to a fire.
- Control can NOT be established from the Emergency Shutdown Panel.
- 1OM-56C.4.B, Alternate Safe Shutdown Outside Control Room is being implemented using Train "A" equipment.

Which one of the following describes the method used to direct shutdown activities once the Control Room is evacuated?

- A. Proceed to the Fire Brigade Room, turn over Emergency Director responsibility to the STA, initiate contact with Operations personnel by radio, and proceed to the Backup Indicating Panel to monitor plant parameters.
- B. Proceed to the Technical Support Center and direct Operations activities using the "Appendix R" phone.
- C. Perform the appropriate procedure to align plant equipment and proceed to the Backup Indicating Panel to monitor plant parameters and direct action using the radio or "Appendix R" phone.
- D. Proceed to the Operations Support Center until the Emergency Response Organization is activated, and then report to the Fire Brigade Room to direct activities using the "Appendix R" phone.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 097

The reactor is tripped. Safety Injection is actuated. All equipment is operating as designed.

Which one of the following describes the reason that RCPs are tripped on RCS to highest SG Delta-P?

- A. Operation of RCPs with Delta-P less than minimum may mask subsequent SGTRs and give false indication of adequate RCS inventory.
- B. Low RCS to SG Delta-P is an indication that a LOCA is in progress for which continued operation will result in damage to the RCPs.
- C. RCP operation during loss of RCS pressure caused by a SBLOCA may result in core uncover if the RCPs were tripped later in the event.
- D. Once RCS pressure is below SG pressure, ECCS flow provides more efficient RCS heat removal. Operation of the RCPs may impede the RCS inventory recovery provided by ECCS.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 098

Given the following conditions:

- The Unit is in Mode 5.
- A loss of RHR has occurred.
- The operating crew has been unable to maintain an RHR pump operating and is preparing to repressurize the RCS in preparation for providing heat removal with "A" SG.
- The crew is directed to check OPPS in service prior to pressurizing the RCS.
- RCS pressure is 290 psig and rising slowly.
- RCS temperature is 195°F and rising slowly.

Which one of the following satisfies the Technical Specification requirement for checking OPPS in service under these conditions?

- A. One PORV armed for OPPS. PORV should be closed.
- B. One PORV armed for OPPS. PORV should be open.
- C. Two PORVs armed for OPPS. PORVs should be closed.
- D. Two PORVs armed for OPPS. PORVs should be open.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 099

Given the following conditions:

- A LOCA has occurred.
- Safety Injection was lost and containment radiation increased to $3E+5$ R/Hr.
- Safety Injection has been reestablished and containment radiation is now $2E+3$ R/Hr and trending DOWN.

Which one, if any, of the following describes the correct use of Adverse Containment parameter values for this event?

- A. Not required during any part of this transient.
- B. Required when the dose rate limit was exceeded, but are no longer required when the dose rate is below the limit.
- C. Required as soon as the dose rate limit was exceeded, and remain in effect for the duration of the event because the total integrated dose is unknown.
- D. Required as soon as the dose rate limit was exceeded, and remain in effect for the duration of the event because since the dose rate limit was exceeded, the total integrated dose was also exceeded.

BVPS-1LOT5 NRC EXAM
Senior Reactor Operator

Question 100

Given the following conditions:

- A Small Break LOCA has occurred.
- The operating crew is performing the actions of ES-1.2, Post LOCA Cooldown And Depressurization.
- Both LHSI pumps have been stopped.
- One HHSI pump has been stopped.
- Normal charging is aligned.
- The crew is depressurizing the RCS.
- When the depressurization is stopped, the following conditions exist:
 - RCS subcooling is 40°F and trending DOWN.
 - Pressurizer level is 18% and trending DOWN.

Based on these indications, what actions are required?

- A. Isolate letdown. Check to ensure Pressurizer level stabilizes above 18%.
- B. Manually start SI pumps as necessary to regain subcooling.
- C. Reinitiate SI and verify all safeguards equipment has actuated.
- D. Increase RCS pressure using Pressurizer heaters to regain subcooling.



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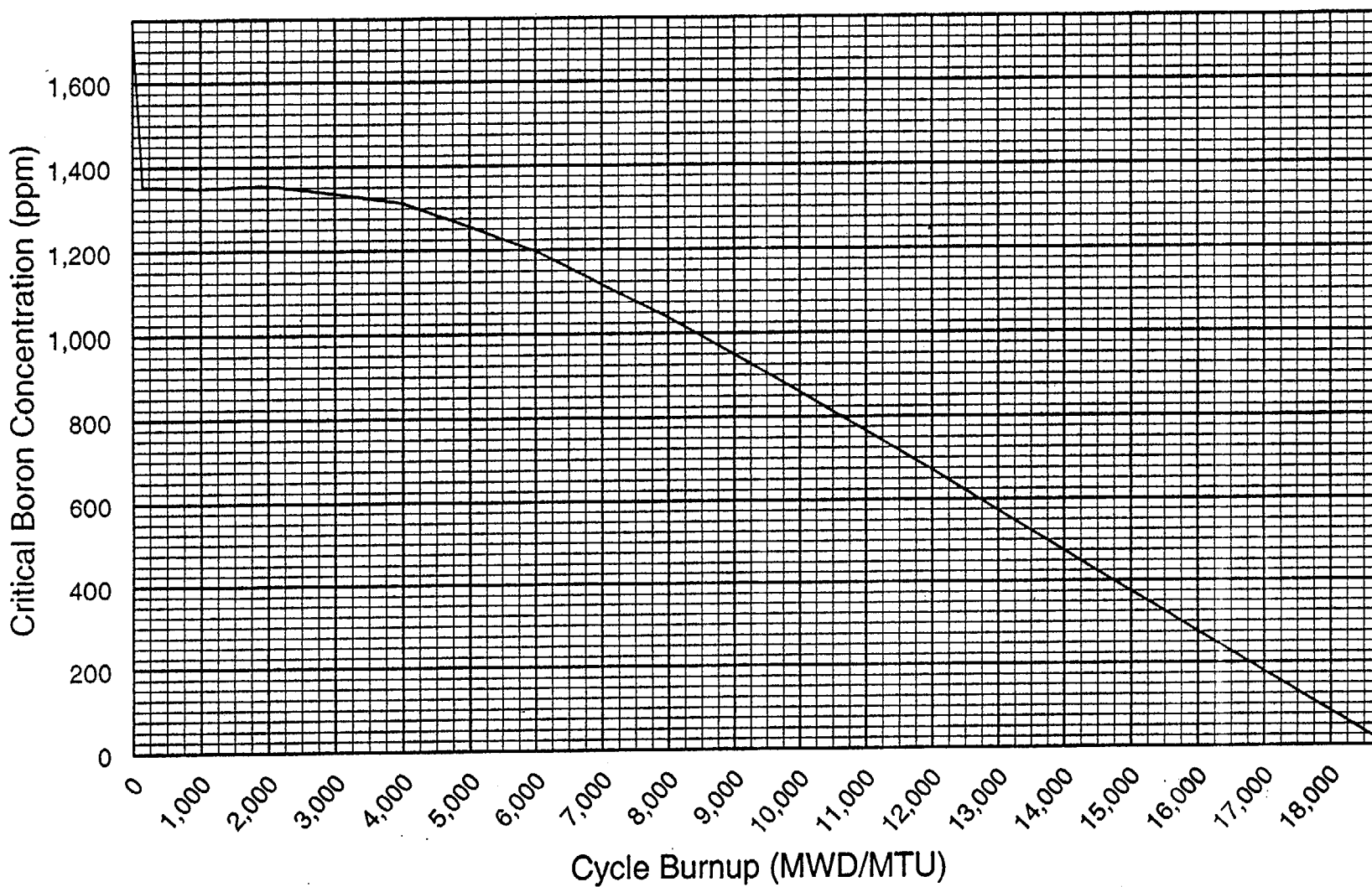
O.M. FIGURE 13-5

FENOC <i>First Energy Nuclear Operating Company</i>									
BEAVER VALLEY POWER STATION UNIT 1									
LOGIC DIAGRAM REFUELING WATER REFRIGERATION UNIT									
TOTAL NTS	DATE 1-16-81	DRAWN BY R. M. ROTH	CHECKED BY M/F	DESIGNED BY N/A	DATE 1-16-81	SCALE 1/2" = 1'-0"	SHEET NO. 1080813	OF 1	PROJECT NO. 8700-LSK-29-5A
7									

ISSUES	
7	THIS DRAWING SUPERSEDES DWG OF SAME NO. REV 6. REDRAWN FOR DWG QUALITY. MINOR DWG. CHANGE. ADDED O.M. FIG. NO.

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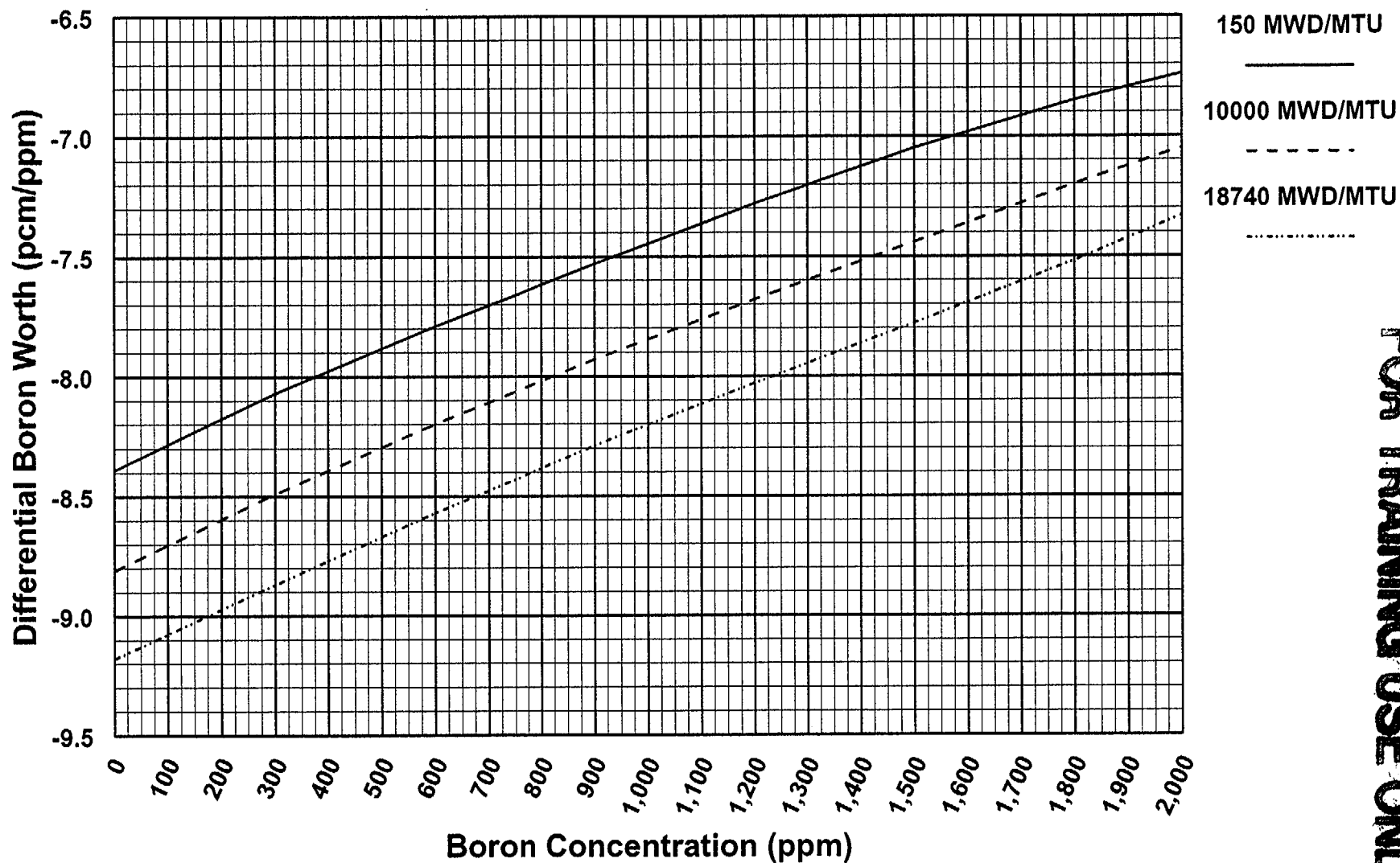
Critical Boron Concentration vs Burnup HFP, ARO, Equilibrium Xenon Unit 1, Cycle 15



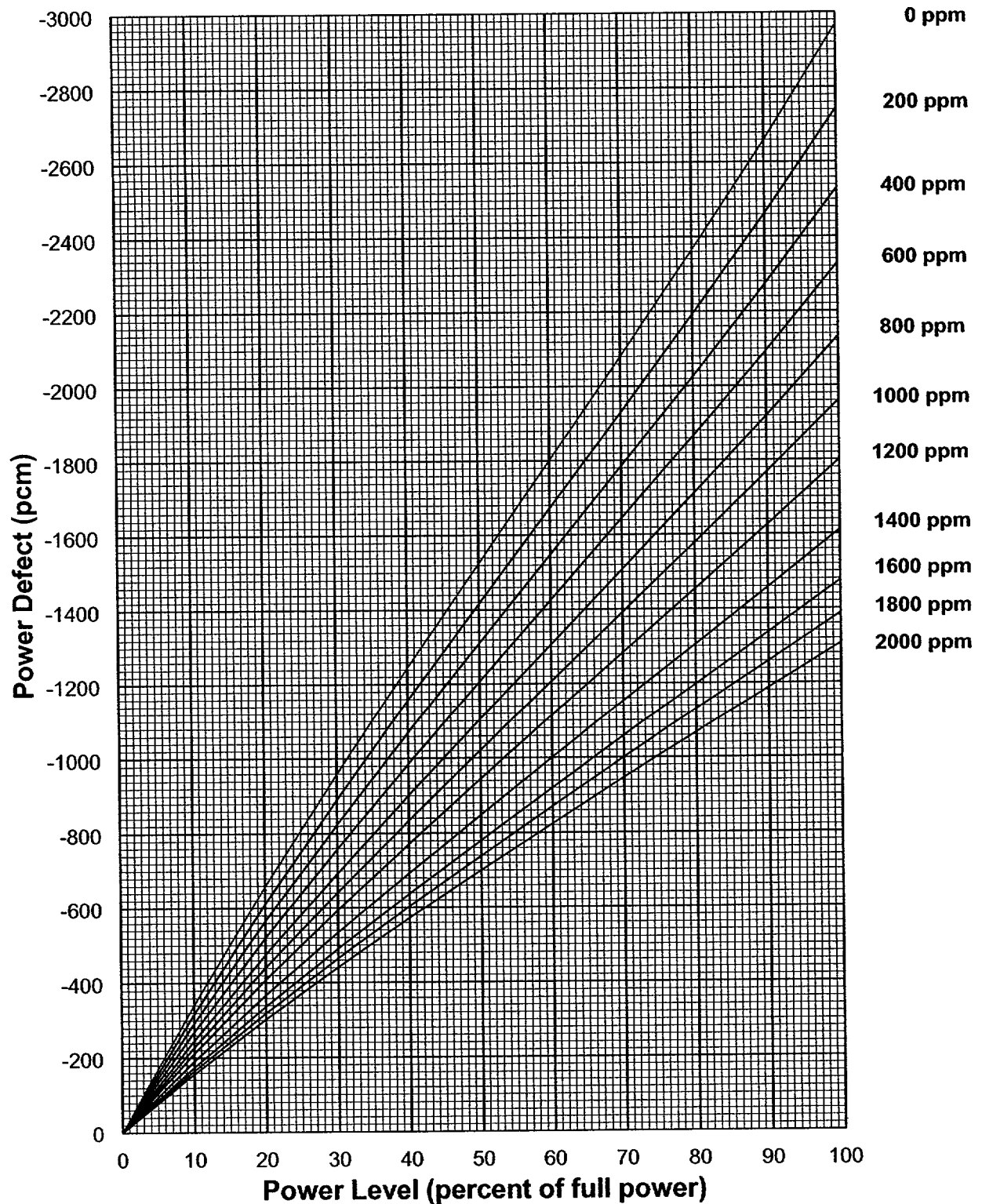
CONTROLLED
BVPS UNIT 1

FOR TRAINING USE ONLY

HZP Differential Boron Worth vs Boron Concentration Unit 1, Cycle 15

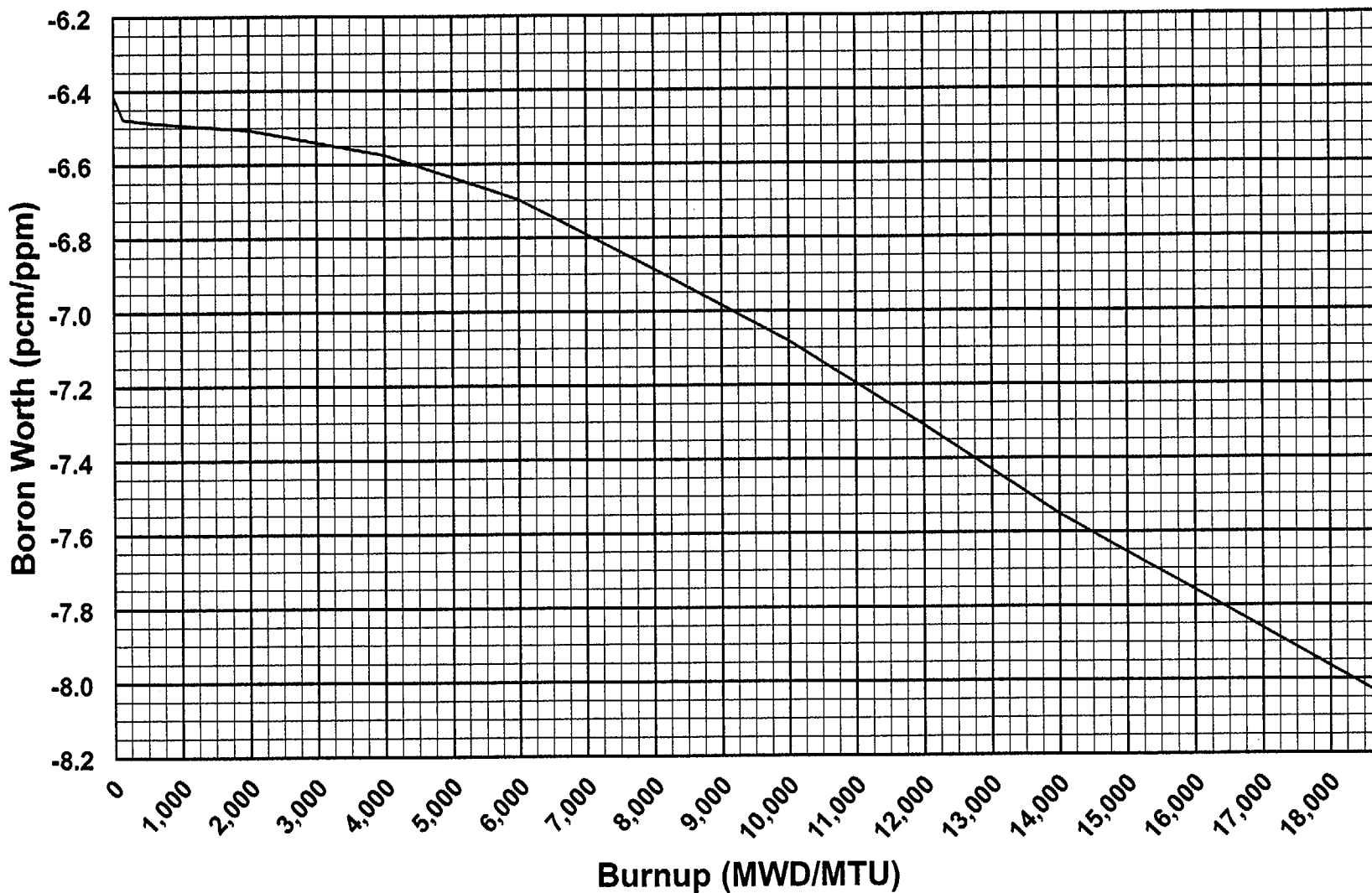


POWER DEFECT vs PERCENT POWER
at BOL, MOL, and EOL
Unit 1, Cycle 15



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Boron Worth vs Burnup
ARO, HFP, Critical Boron
Unit 1, Cycle 15



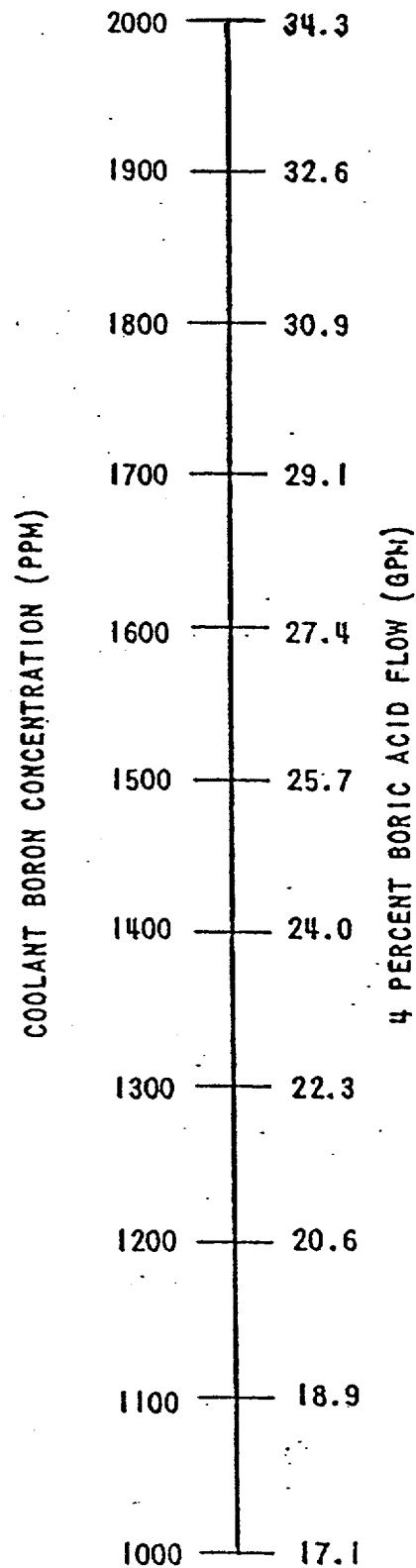
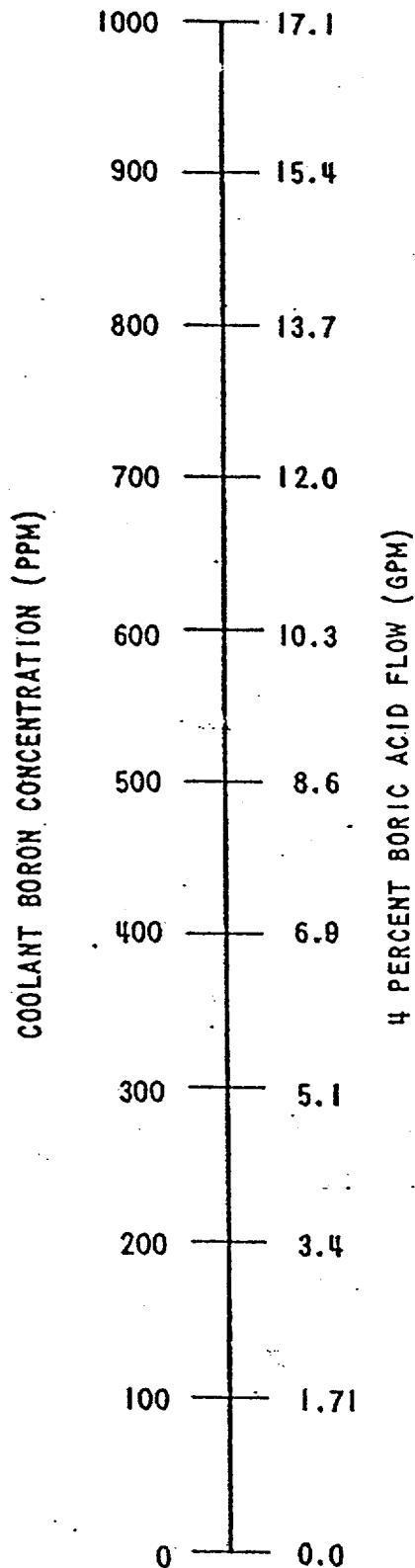
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Issue 15 Rev 1

CURVE BOOK – BVPS I

CB-30

Record Type #9A.345D



BLENDING FLOW BASED ON 120 GPM AUTO MAKEUP

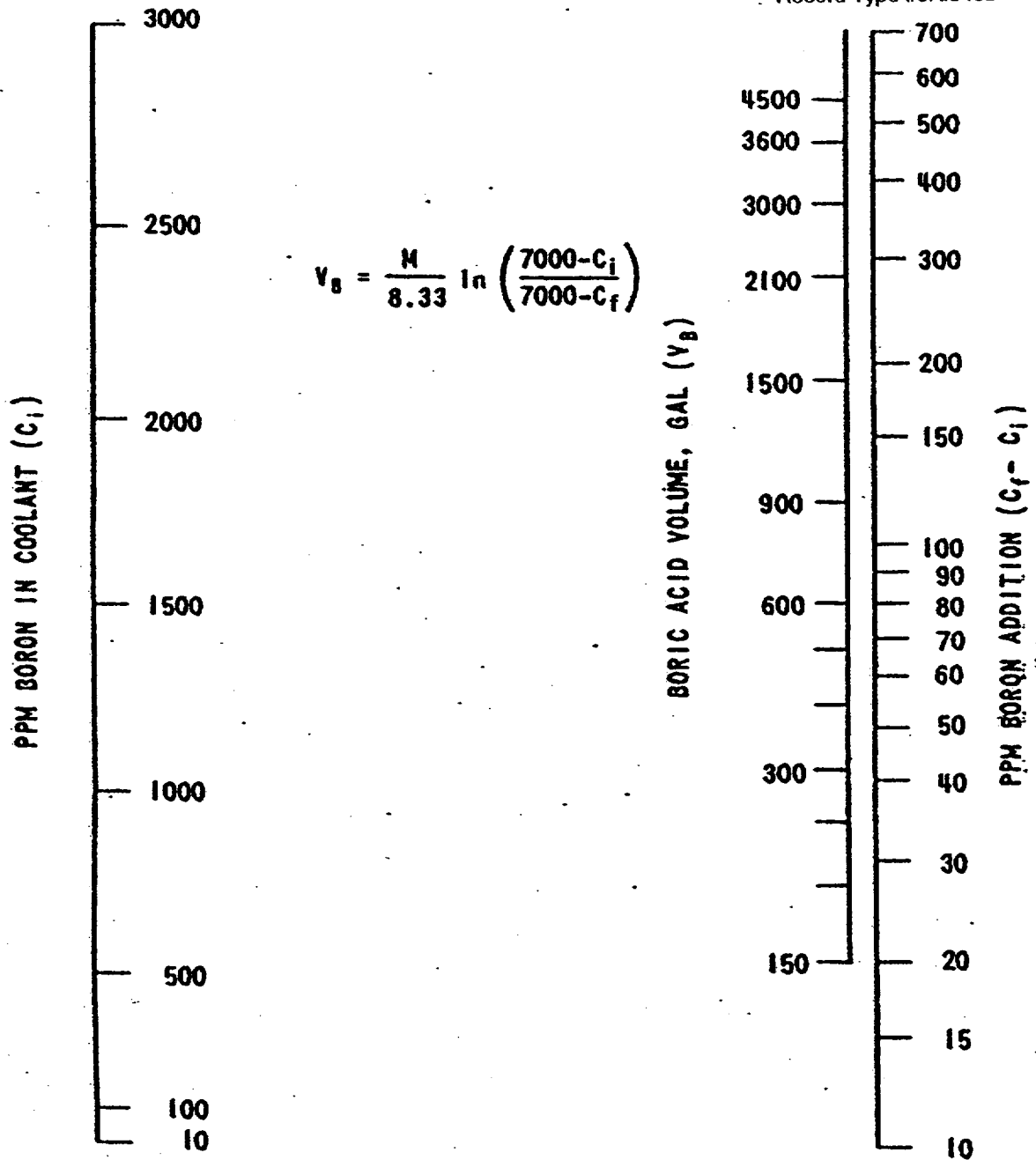
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ISSUE 15 REV 0

CURVE BOOK – BVPS I

CB-31

Record Type #9A.345D



BORON ADDITION

(refer to figure CB-36 for correction factors)
(refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

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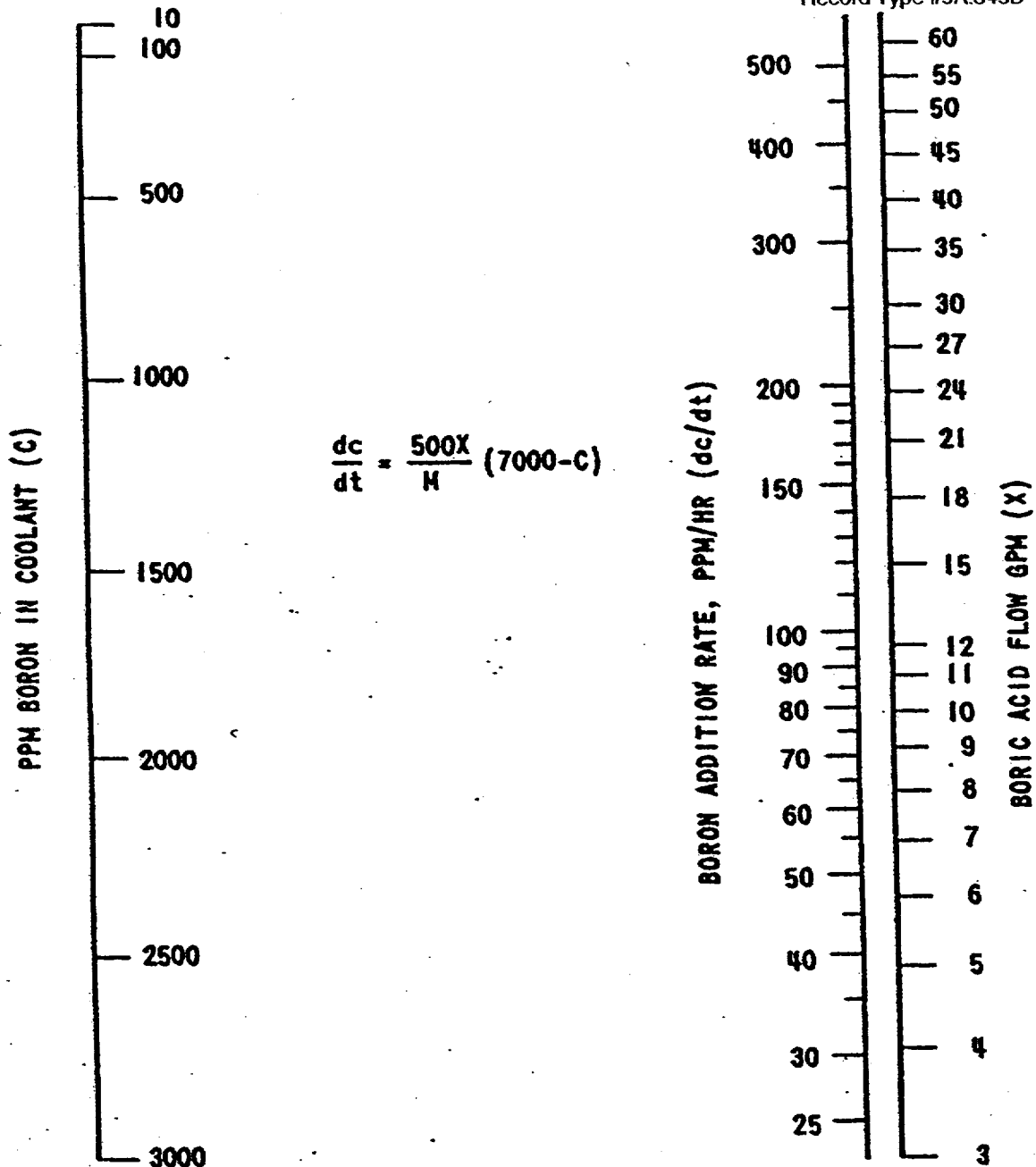
CONTROLLED
BVPS UNIT 1

ISSUE 15 REV 2

CURVE BOOK – BVPS I

CB-32

Record Type #9A.345D



BORON ADDITION RATE

(refer to figure CB-36 for correction factors)

(refer to 1OM-6.5.B.6, Table 6-6, "RCS Volume")

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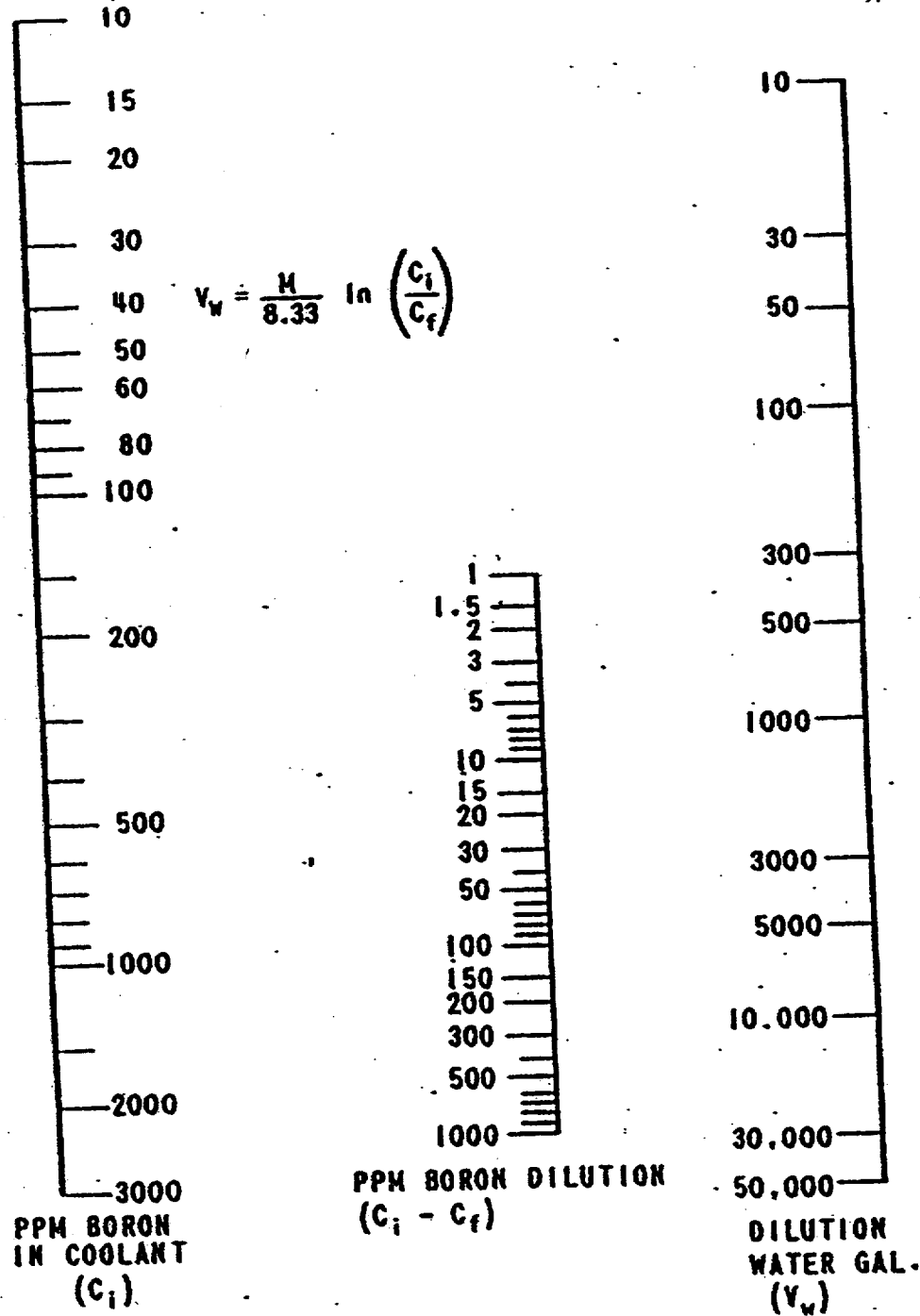
CONTROLLED
BVPS UNIT 1

ISSUE 15 REV 2

CURVE BOOK - BVPS I

CB-33

Record Type #9A.345D



BORON DILUTION

(refer to figure CB-36 for correction factors)
 (refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

FOR TRAINING USE ONLY

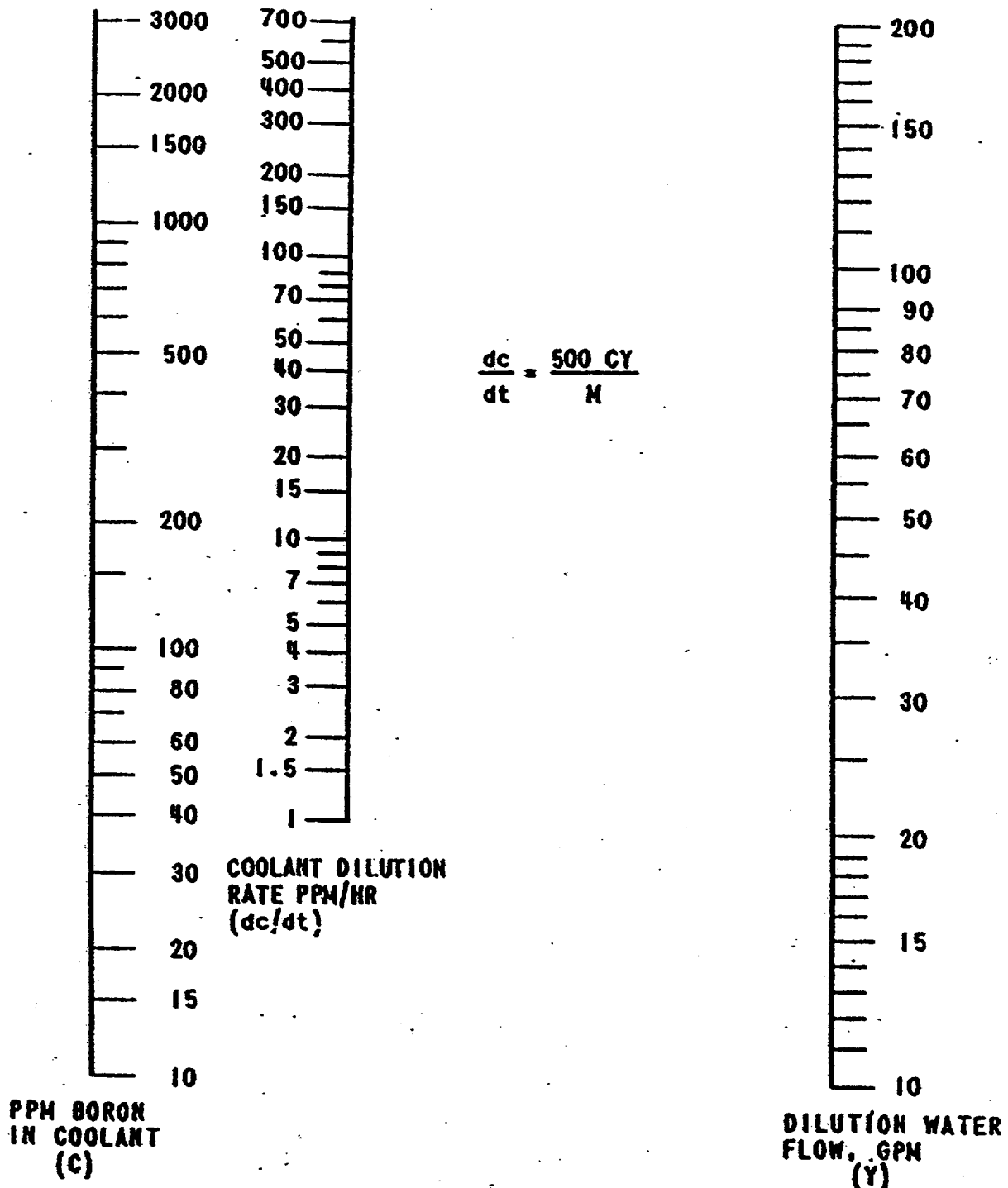
CONTROLLED
 BVPS UNIT 1

ISSUE 15 REV 2

CURVE BOOK – BVPS I

CB-34

Record Type #9A.345D



BORON DILUTION RATE

(refer to figure CB-36 for correction factors)
 (refer to 10M-6.5.B.6, Table 6-6, "RCS Volume")

FOR TRAINING USE ONLY
 CONTROLLED
 BVPS UNIT 1

CURVE BOOK – BVPS I

CB-36

Record Type #9A.345D

NOMOGRAPH CORRECTION FACTORS

Pressure (psig)	Plant Conditions		Correction Factor (K) (See Note)
	T (AVG) (°F)	Pressurizer Level	
2235	547-570	Normal Operating	1.00
1600	500	No-Load	1.05
1200	450	No-Load	1.10
800	400	No-Load	1.16
400	350	No-Load	1.18
400	300	No-Load	1.20
400	300	Solid Water	1.35
400	200	No-Load	1.28
400	200	Solid Water	1.40
400	100	Solid Water	1.47

NOTE: CORRECTION FACTORS ARE APPLIED AS FOLLOWS:

- (a) Boron Addition and Dilution Total Volume Nomographs

$$V(\text{Corrected}) = K \times V(\text{Nomograph})$$

- (b) Boron Addition and Dilution Rate Nomographs

$$\frac{dc}{dt}(\text{Corrected}) = \frac{1}{K} \times \frac{dc}{dt}(\text{Nomograph})$$

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⑤5-TK-1

REVISION 1

REFUELING WATER STORAGE TANK

2-25-83

999

FOR TRAINING USE ONLY

84-056-14-83 2-15-83

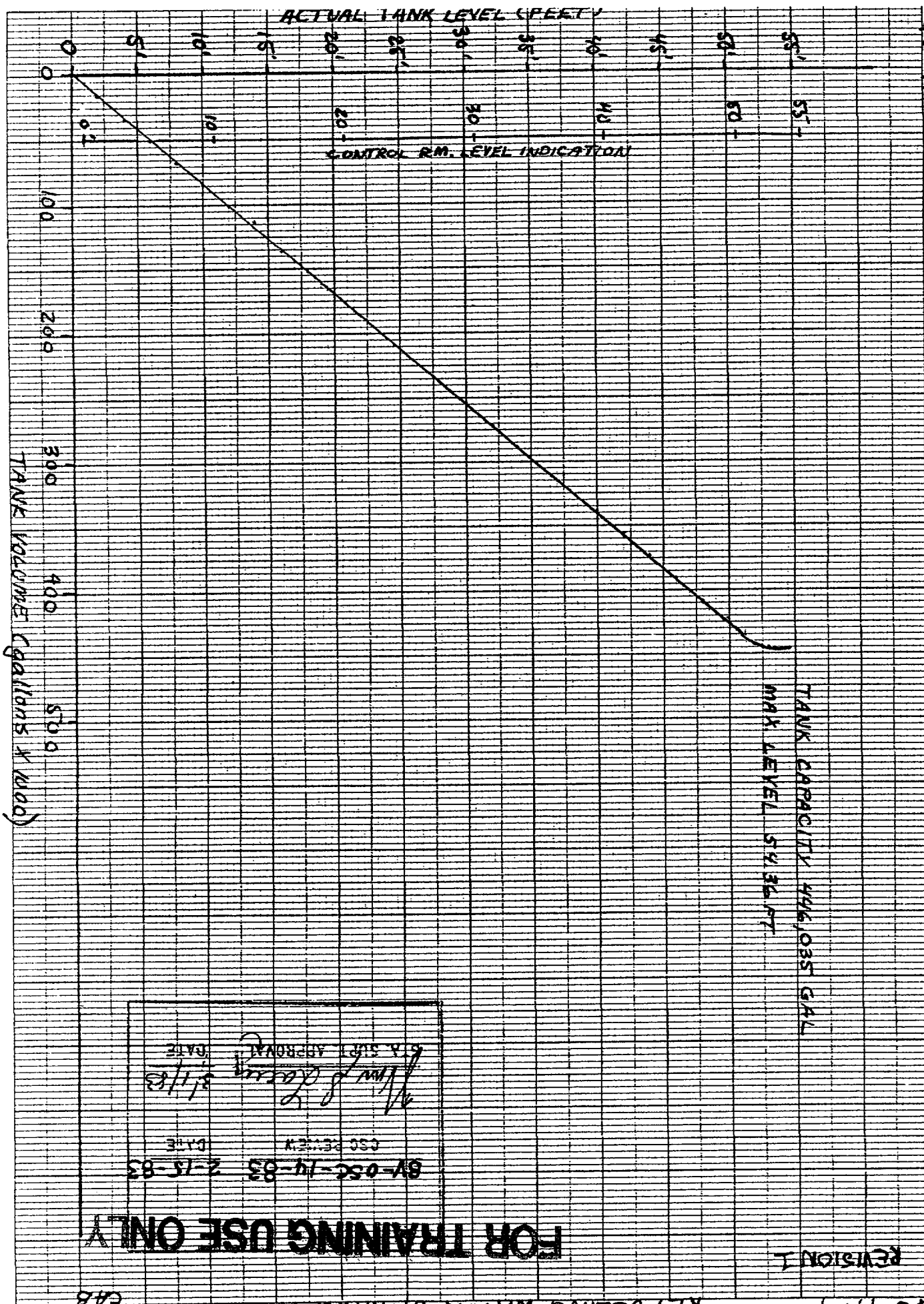
11-11-63 11-11-63 11-11-63

3454

DATE 8/1/83

2173

TANK CAPACITY 446,035 GAL
MAX LEVEL 54.36 FT



SYMPTOMATIC RESPONSE/UNEXPECTED CONDITIONS

E-3 (Issue 1C, Revision 2)

1. SI REINITIATION CRITERIA

Manually operate SI pumps and align valves as necessary and GO TO ECA-3.1, "SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired", Step 1, if EITHER condition listed below occurs:

- On ICCM RCS subcooling based on core exit TCs - LESS THAN 46F [54F FOR ADVERSE CNMT] (If less, refer to Attachment 6-A)
- PRZR level - CANNOT BE MAINTAINED GREATER THAN 18% [37% FOR ADVERSE CNMT]

2. SECONDARY INTEGRITY CRITERIA

GO TO E-2, "Faulted Steam Generator Isolation", Step 1, if any SG pressure is dropping in an uncontrolled manner or has completely depressurized, and has not been isolated unless needed for RCS cooldown.

3. COLD LEG RECIRCULATION SWITCHOVER CRITERION

GO TO ES-1.3, "Transfer Cold Leg Recirculation", Step 1, if RWST level reduces to less than 19 FEET.

4. AFW SUPPLY SWITCHOVER CRITERION

Monitor PPDWST [WT-TK-10] for AFW pumps supply. Upon reaching low level alarm, 27.5 FEET, refer to Attachment 2-H for makeup.

5. MULTIPLE TUBE RUPTURE CRITERIA

RETURN TO E-3, "Steam Generator Tube Rupture", Step 1, if any intact SG level rises in an uncontrolled manner or any intact SG has abnormal radiation.

6. ADVERSE CONTAINMENT CRITERIA

- CNMT pressure - GREATER THAN 5.0 PSIG
-OR-
- CNMT radiation on [RM-1RM-219A(B)] - GREATER THAN 1E+5 R/HR
-OR-
- Integrated CNMT radiation - GREATER THAN 1E+6 R

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Number E-3	Title Steam Generator Tube Rupture	Issue 1C Revision 2
---------------	--	------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

CAUTION

RCS and ruptured SGs pressures must be maintained less than the ruptured SGs atmospheric steam dump setpoint to prevent offsite releases.

NOTE

When letdown is in service, charging flow should be maintained greater than 30 GPM to ensure adequate letdown cooling and prevent letdown from flashing to steam.

31 Control RCS Pressure And Charging Flow To Minimize RCS-To-Secondary Leakage

- a. Perform appropriate actions from table:

		RUPTURED SG NR LEVEL		
		RISING	DROPPING	OFFSCALE HIGH
P R Z R L E V E L	LESS THAN 32% [50% ADVERSE CNMT]	<ul style="list-style-type: none"> Raise charging flow Depressurize RCS using Step 31.b 	Raise charging flow	<ul style="list-style-type: none"> Raise charging flow Maintain RCS & ruptured SGs pressures equal
	BETWEEN 32% [50% ADVERSE CNMT] AND 50%	Depressurize RCS using Step 31.b	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal
	BETWEEN 50% AND 75% [61% ADVERSE CNMT]	<ul style="list-style-type: none"> Depressurize RCS using Step 31.b Lower charging flow 	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal
	GREATER THAN 75% [61% ADVERSE CNMT]	Lower charging flow	Turn ON PRZR heaters	Maintain RCS & ruptured SGs pressures equal

(step continued next page)

CONTAINMENT SYSTEMS

CHEMICAL ADDITION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.3 The chemical addition system shall be OPERABLE with:

- a. A chemical addition tank containing at least 4700 gallons of between 19.5 and 20 percent by weight NaOH solution, and
- b. Two chemical injection subsystems each capable of adding NaOH solution from the chemical addition tank to a containment quench spray system pump flow.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one chemical addition subsystem inoperable, restore the subsystem to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours; restore the chemical addition subsystem to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 36 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.3 The chemical addition system shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power-operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. By verifying, that on recirculation flow, each pump develops a flow between 25 and 35 gpm when tested pursuant to Specification 4.0.5.

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INSTRUMENTATION

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

- a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.
- b. With one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6.
- c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in Table 4.3-3.

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TABLE 3.3-6

DPR-66

RADIATION MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>SETPOINT</u> ⁽³⁾	<u>MEASUREMENT RANGE</u>	<u>ACTION</u>
1. AREA MONITORS					
a. Deleted					
b. Containment					
i. Purge & Exhaust Isolation (RMVS 104 A & B)	2	(2)	$\leq 1.6 \times 10^3$ cpm	$10 - 10^6$ cpm	22
ii. Area (RM-RM-219 A & B)	2	1,2,3 & 4	$\leq 1.5 \times 10^4$ R/hr	$1 - 10^7$ R/hr	35
c. Control Room Isolation (RM-RM-218 A & B)	2	1,2,3,4 and (4)	$\leq .47$ mR/hr	$10^{-2} - 10^3$ mR/hr	41
2. PROCESS MONITORS					
a. Containment					
i. Gaseous Activity RCS Leakage Detection (RM 215B)	1	1,2,3 & 4	N/A	$10 - 10^6$ cpm	20
ii. Particulate Activity RCS Leakage Detection (RM 215A)	1	1,2,3 & 4	N/A	$10 - 10^6$ cpm	20
b. Deleted					

TABLE 3.3-6 (Continued)TABLE NOTATIONS

- (1) (Not used)
- (2) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.
- (3) Above background.
- (4) During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies.

ACTION STATEMENTS

- ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.
- ACTION 21 - This Action is not used.
- ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.
- ACTION 35 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable Channel(s) to OPERABLE status within 72 hours, or:
- a) Initiate the preplanned alternate method of monitoring the appropriate parameter(s), and
 - b) Return the channel to OPERABLE status within 30 days, or, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.
- ACTION 41 - a) With the number of Unit 1 OPERABLE channels one less than the Minimum Channels OPERABLE requirement:
- 1. Verify the respective Unit 2 control room radiation monitor train is OPERABLE within 1 hour and at least once per 31 days.

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TABLE 3.3-6 (Continued)

ACTION STATEMENTS

ACTION 41 (Continued)

2. With the respective Unit 2 control room radiation monitor train inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the Unit 1 control room radiation monitor to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.
- b) With no Unit 1 control room radiation monitors OPERABLE:
 1. Verify both Unit 2 control room radiation monitors are OPERABLE within 1 hour and at least once per 31 days.
 2. With either Unit 2 control room radiation monitor inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the respective Unit 1 control room radiation monitor train to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.
 3. With no Unit 2 control room radiation monitors OPERABLE, immediately isolate the combined control room by closing all series air intake and exhaust isolation dampers and be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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